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[54] **DATA TRANSMISSION AND STORAGE**

[75] Inventors: **Malcolm E. A. Kaufman**, Los Angeles, Calif.; **Gerald P. Selden**, Blairstown, N.J.; **Roger Booth**, Chester, N.J.; **James C. Wickstead**, Mendham, N.J.; **Peter D. Ellis**, Needham, Mass.

[73] Assignee: **Dynamic Broadcasting Network, Inc.**, Santa Monica, Calif.

[21] Appl. No.: **462,403**

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[51] **Int. Cl.**[5] **H04M 11/00**

[52] **U.S. Cl.** **379/98**; 379/104

[58] **Field of Search** 379/94, 96, 97, 98, 379/102, 104

[56] **References Cited**

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Primary Examiner—Jin F. Ng

Assistant Examiner—Ahmad F. Matar

Attorney, Agent, or Firm—Christie, Parker & Hale

[57] **ABSTRACT**

A sequence of data groups are modulated at a central location and coupled to a telephone line in response to a call-up signal. The sequence is transmitted through the telephone lines to a remote computer. The computer receives the signals, demodulates them, and couples them to a moemory. The data is stored at a particular address, and in coupling the data to the memory, the computer checks a flag at that address to determine whether the data has already been written over. When the flags indicate that the data received corresponds to data already written over, it signals the end of a transmission. The data stored in the memory can be accessed by an operator using input controls.

11 Claims, 2 Drawing Sheets

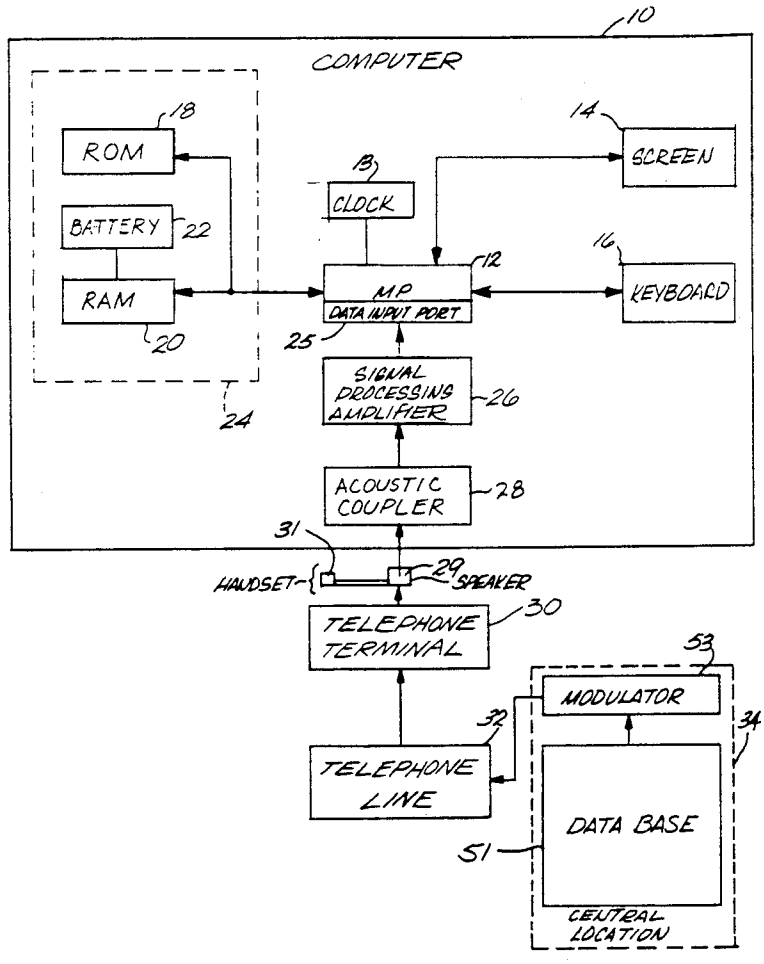


FIG. 1

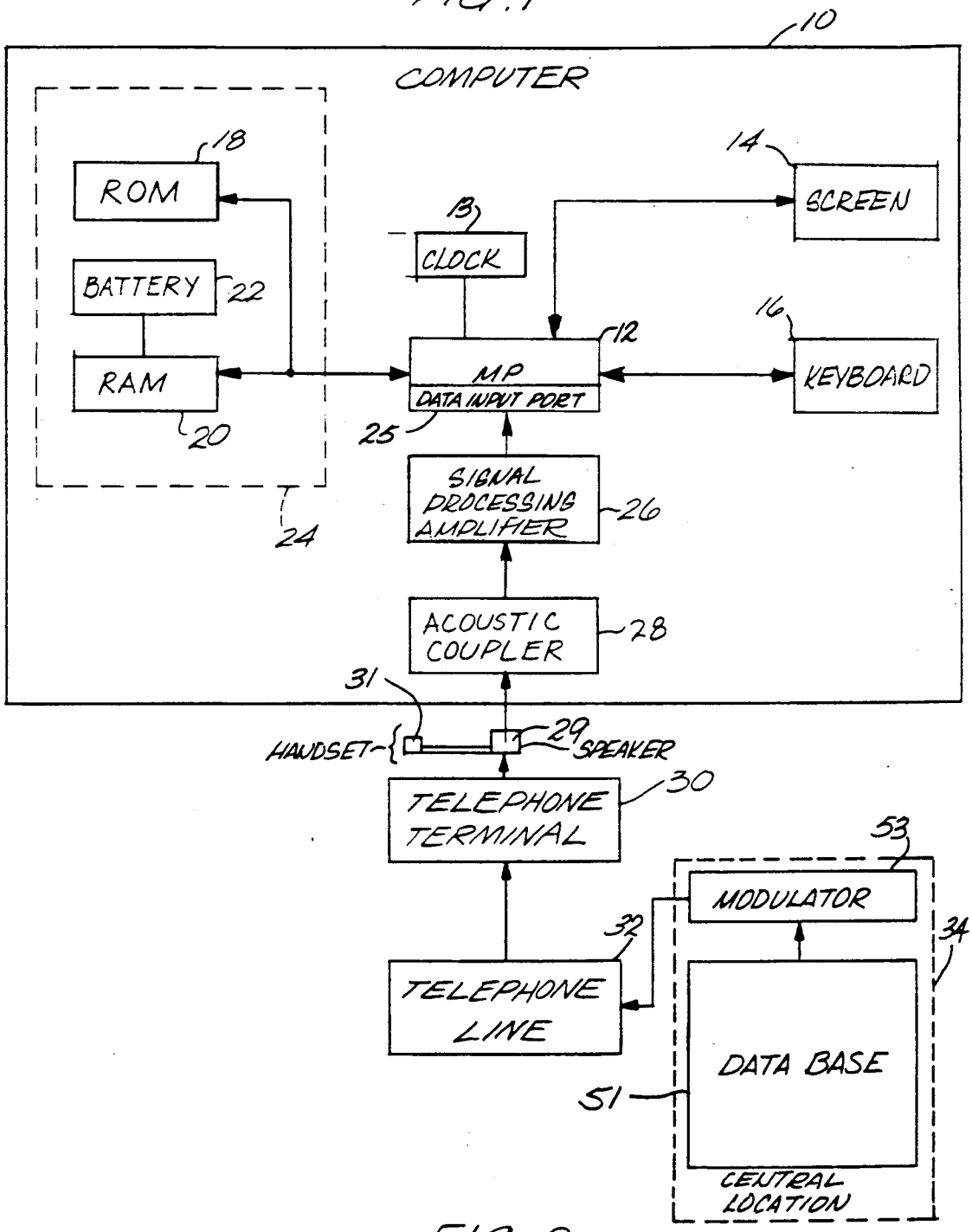
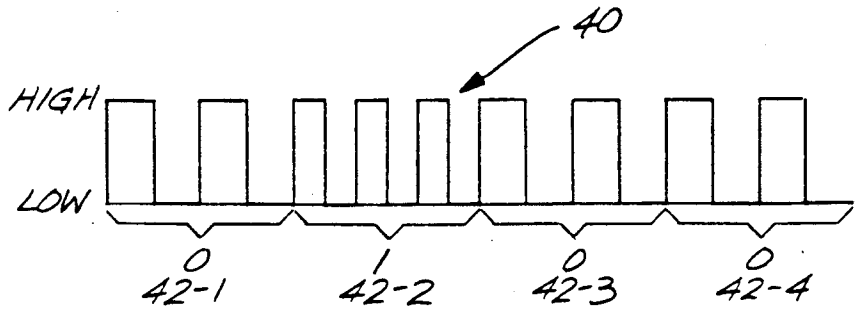

10
COMPUTER
18
ROM
BATTERY
22
RAM
20
24
13
CLOCK
14
SCREEN
16
KEYBOARD
12
MP
DATA INPUT PORT
25
SIGNAL PROCESSING AMPLIFIER
26
ACOUSTIC COUPLER
28
31
HANDSET
29
SPEAKER
30
TELEPHONE TERMINAL
53
MODULATOR
32
34
TELEPHONE LINE
DATA BASE
51
CENTRAL LOCATION

FIG. 2


40
HIGH
LOW
0
42-1
1
42-2
0
42-3
0
42-4

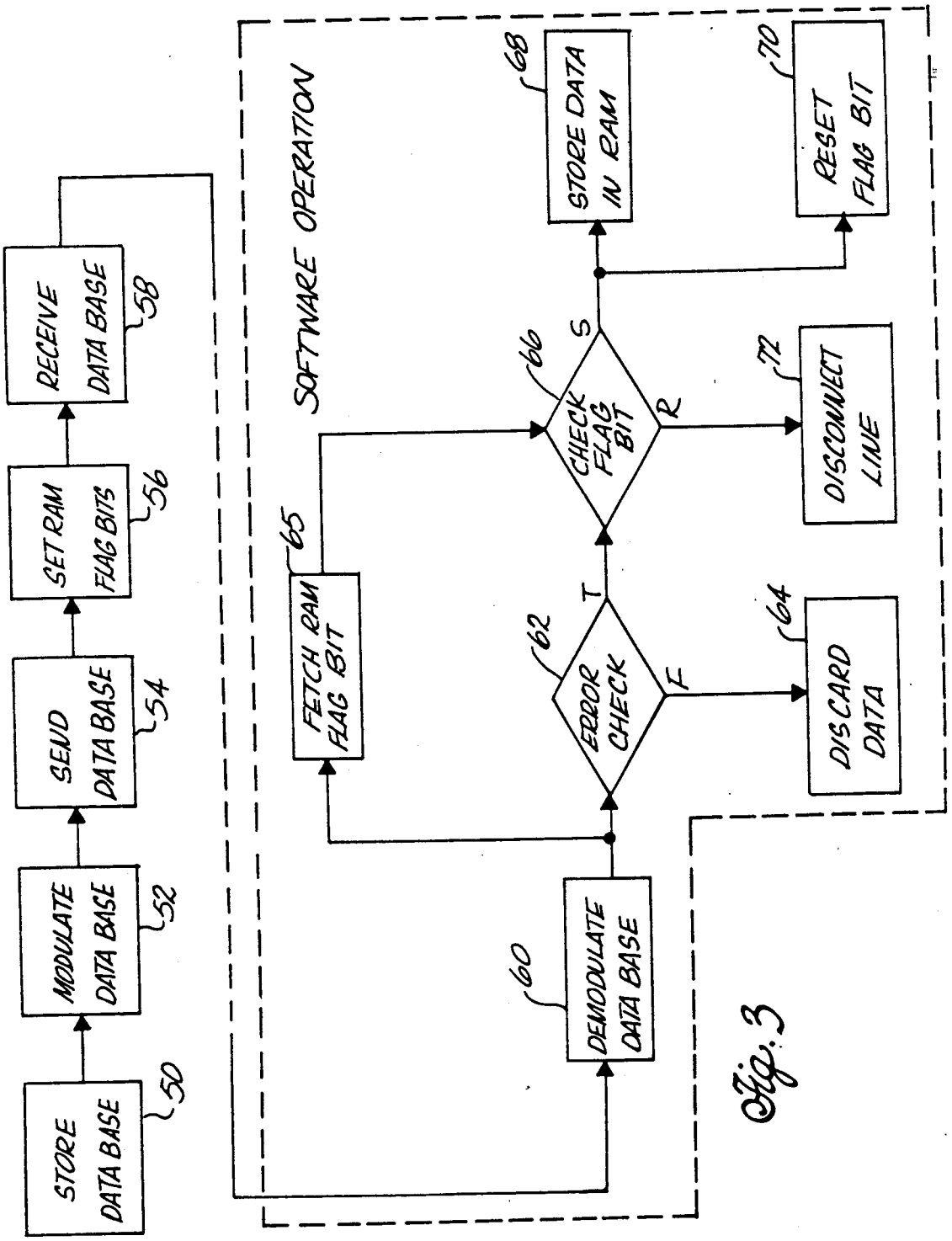

STORE DATA BASE
50
MODULATE DATA BASE
52
SEND DATA BASE
54
SET RAM FLAG BITS
56
RECEIVE DATA BASE
58
SOFTWARE OPERATION
DEMODULATE DATA BASE
60
ERROR CHECK
62
T
F
DISCARD DATA
64
FETCH RAM FLAG BIT
65
CHECK FLAG BIT
66
S
R
STORE DATA IN RAM
68
DISCONNECT LINE
72
RESET FLAG BIT
70

Fig. 3

DATA TRANSMISSION AND STORAGE

FIELD OF THE INVENTION

The present invention relates to the field of data transmission and storage and, in particular, to transmitting and receiving data over telephone lines asynchronously and then storing it for later retrieval and display.

BACKGROUND OF THE INVENTION

A variety of data transmission and storage schemes using telephone systems are available. These schemes normally require that the data transfer be done synchronously, i.e., that a known signal begins at a known location in a data stream and transmits through to a known end. Synchronicity is typically insured using a two-way handshake protocol. At the receiver, some hardware is dedicated to demodulating the received data and converting it to a binary signal, while other hardware is dedicated to the tasks of conducting the handshake and of assembling, sorting, and storing the data. These functions are all duplicated at the transmitter as well. The conventional transmission and storage schemes require expensive complex equipment at both the transmitting and receiving ends, together with two-way communication capability.

The expense and complexity of equipment required for existing schemes make it difficult to produce a portable information display which can be easily updated over the telephone, yet is still compact enough to be tucked in a pocket or purse.

SUMMARY OF THE INVENTION

The present invention allows a remote and preferably portable device to receive data over the phone line asynchronously and store it in memory for later recall. It provides for a small portable inexpensive device for displaying sorted stored data which can easily be updated by dialing a telephone number.

In one embodiment, the invention is a method for accessing data by the following steps. A data base arranged in date groups specifying addresses in the memory of the remote device is stored in binary form at a central location. One or more telephone lines are connected to the central location. The data base is modulated and coupled in a prescribed sequence of data groups to one of the telephone lines in response to a call-up signal. A call-up signal is sent to one of the telephone lines from a telephone terminal at a remote location. At the remote location, there is a computer with a memory for storing a data base in data groups at the addresses specified by the data at the central location. Each data group of the memory has a flag bit that is alternately in a set or reset state. The computer also has a screen for selectively displaying the stored data base. A plurality of input controls and a microprocessor coupled to the telephone terminal and programmed to retrieve selected data (selected by operating the input controls) from the memory and display such data on the screen.

When the call-up signal is sent to the central location by the telephone terminal, the flag bit of all of the data groups is set. When the telephone line is called up, the data base transmitted from the central location is received at the telephone terminal, the data base is demodulated, and then coupled from the telephone terminal to the memory of the computer to update the data base stored in the memory. This is done by storing the data group, at the specified address one data group at a time, and resetting the flag bit at that address. After all the flag bits have been reset, the end of transmission is signaled and finally the input controls are operated to access the data stored in the memory of the computer.

Preferably, the step of coupling the data base to the memory of the computer includes checking the flag bit at the specified address of each data group and overwriting the data stored at the specified address with the demodulated group only if the flag bit is set at the time of checking. Preferably, the step of coupling the data base also includes initiating the signaling step if the flag bit is reset at the time of checking.

In another embodiment, the invention is a method composed of the following steps. A data base is stored in binary form at a central location. One or more telephone lines are connected to the central location. The data base is modulated and coupled to one of the telephone lines in response to a call-up signal. A call-up signal is sent to one of the telephone lines from a telephone terminal. The telephone terminal is at a remote location and has a handset. There is also a computer resident at the remote location with a memory for storing the data base, a screen for displaying the data base, input controls, a microprocessor, and an acoustic coupler. The acoustic coupler is placed close to the speaker of the handset to receive the data base transmitted from the central location when the telephone line is called up. The acoustic coupler is connected through an amplifier to the microprocessor, and the microprocessor is programmed to store the received data base in the memory. The input controls are operated to access the data stored in the memory. The microprocessor is programmed to retrieve data from the memory and display it on the screen in response to operation of the input controls.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a block diagram showing a preferred apparatus for embodying the present invention.

FIG. **2** is a graph showing typical waveforms for frequency shift keying according to the present invention. FIG. **3** is a block diagram illustrating the method for transmitting a data base from a central location over a phone line to a portable handheld computer.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** shows in block diagram form an apparatus for practicing the present invention. A handheld computer **10** is driven by a microprocessor **12** which has an internal clock **13**. The microprocessor drives a screen **14** and receives commands through a keyboard **16**. A NEC 7008 microprocessor is presently preferred for this embodiment. The programming instructions for the microprocessor are provided by a read only memory (ROM) **18**. Data for manipulation by the microprocessor and display on the screen **14** are stored in a random access memory (RAM) **20**. The RAM is normally powered by the computer's main power supply. However, when the power supply is shut off, the RAM data is maintained by a battery **22**. The ROM, RAM and battery are provided on a removable replaceable cartridge **24**. This allows the microprocessor **12** instructions in the ROM **18** and the data stored in the RAM **20** to be replaced by replacing the cartridge.

The microprocessor also has a data input port **25** to receive signals from a signal processing amplifier **26** which processes signals sent to it from an acoustic coupler **28**. The acoustic coupler is typically an electret condenser microphone which is placed over the speaker **29** of a handset **31** of a conventional telephone terminal **30**. The telephone terminal **30** receives information sent over a telephone line **32** from a central location **34**. The central location **34** contains a data base **51** and hardware, including a modulator **53**, which allows it to transmit information from the data base into the telephone line to the telephone terminal **30**.

An example series of steps to be performed by the apparatus of FIG. **1** is set forth in the flow diagrams of Appendices 1 and 2. Further details are supplied by the source code listing of Appendix 3. The source code is suitable for use with a NEC 7008 microprocessor. Appendix 1 is a flow diagram for updating the data stored in the RAM **20** by transmitting data from the central location **34** over the telephone line **32** to the telephone terminal **30** where it is detected by the acoustic coupler **28**, processed by the amplifier **26**, converted to a binary bit sequence by the microprocessor **12**, and then stored in the RAM **20**. Appendix 2 is a flow chart showing a sequence of steps for selectively displaying the stored data on the screen **14** through operating the input controls on the keyboard **16**. In the example of Appendices 1 and 2, the stored data is baseball player and team statistics. The Appendices require only a few input controls or keys on the keyboard. These keys are labeled softkey **1**, softkey **2**, and softkey **3** for selecting menu items, arrow key up, arrow key down, arrow key left, and arrow key right for moving a cursor on the screen, and a previous key for displaying a previous screen.

In the presently preferred embodiment, the computer **10** is updated when data is transmitted from the central location **34**. The data is transmitted in the form of sine waves. Sine waves are preferred because they are best suited to telephone line transmission, however, any other waveform or signal format may be used. The central location contains a data base of the data which is to be transferred to the computer at its remote location. At the central location the data is drawn from the data base, modulated and then coupled to the phone lines. It is presently preferred to use 1200 hertz for a binary data 0, 1800 hertz for a binary data 1, and 2400 hertz for the start of a data packet. Sine waves at these frequencies are well suited to transmission over conventional telephone lines **32**.

The sine waves of tones sent through the telephone line can be generated from a binary data base in response to each telephone call or they can be generated continuously and played simultaneously to any and all callers. The tone can also be generated once and then stored on an audio tape so that the audio tape is played into the telephone line when a call is connected. The tones on the audio tape are rerecorded when there is a change in the binary data.

The modulated signal is sent through the telephone line to the terminal where it is filtered, amplified, and converted to a stable square-wave function. This provides signal edges for the microprocessor to detect. The acoustic coupler **28** is preferably an isolated electret microphone which is placed over the earpiece or speaker of the telephone terminal handset. The unamplified sine wave is received from the handset speaker, and transmitted to the signal processing amplifier. It is then fed to an automatic gain control circuit for further filtering and amplification. The automatic gain control circuit provides a more steady signal over varying input amplitudes. The output of this is fed to a 30 to 1 gain stage to provide sharp clipped edges of the sine waves. Finally the amplified semisquare wave is fed through a capacitor and a bias set divider set into a Schmitt trigger. The output of the Schmitt trigger is a virtual square wave determined by the input bias set point. This virtual square wave is the output of the signal processing amplifier and fed to the microprocessor **12** through a standard buffer circuit where it is interpreted by the software. The circuitry described above can be implemented using techniques well known in the art. As described above, this circuitry receives and demodulates the data received over the telephone line, shaping the data base for processing along the lines outlined in Appendix 1. In general, amplifier **26** converts the signal transmitted over telephone line **32** to a form compatible with the input to microprocessor **12**.

The updating process begins by setting a software control error flag associated with each data packet stored in the RAM **20**. The data from the central location is received and stored in groups or blocks which shall be referred to as packets. In the example of Appendix 1, these packets correspond to the statistics for one baseball player i.e., each packet is a file for one particular player. In Appendix 1, each packet is called a player database. A software error flag is set in the RAM **20** for each player before any data is received from the central location. If any error flags are not reset during an updating cycle, the microprocessor can detect this and indicate to the user when the data is displayed that the corresponding player databases are not updated.

It is presently preferred that the system download information from a 900 prefix telephone service although any other telephone service may be used. Each downloading process will be two to three minutes in length and will preferably use an endless loop tape or other continuously cycling data storage device. The 900 service will open the phone line to this tape as soon as the call up signal is received. Therefore, the computer **10** must be able to start receiving data in the middle of a transmission at any point on the tape. In addition, there is no synchronization protocol or clock synchronizing protocol. The transmission is asynchronous. Assuming that the data stream is continuous, the end of a transmission cycle occurs when data has been written to one player data base twice. This is determined by examining the error flags in the RAM **20**. A player is only written over when the error flag is set, indicating that the player has not yet been updated. The error flags can also be used to determine whether each player database has been updated and display this fact on the screen.

As mentioned above, data is frequency keyed using frequencies of 1200, 1800, and 2400 hertz. The data is formatted into a series of packets. Each packet begins with a 2400 hertz start signal. This is followed by a two-byte header. The header serves as an address to the RAM **20** in the computer and also contains the error flag in the reset state. Following the header is the player data to be stored in the RAM and finally an error detection code. Each data byte contains a start bit which is always zero, eight data bits and a stop bit which is always one, so that each new byte begins with a transition from one to zero. The error detection bits are used to determine whether the data has been accurately transmitted. Any simple error detection scheme could be

used including parity and summing. The error detection bits are not stored in RAM **20**. An error detection and correction sequence could be included as a part of the microprocessing functions, however, for simple and small databases it is less expensive to simply retransmit the data base from the central location when the transmission contains a large number of errors.

As diagrammed in Appendix 1, after the error flag is put in the set state for each current player data base, the microprocessor tests the previous key. If this is depressed, then the update sequence is exited. If it is not depressed, then the "checksum" or error detection register is cleared, the cycle counter and count registers are cleared, the "B pointer" or address register is zeroed and the bit counter is set to "start." The microprocessor then begins testing data received from the signal processing amplifier.

FIG. **2** shows a graph of a portion of a typical frequency keyed microprocessor input signal as received from the signal processing amplifier **26**. The square wave **40** is either a low or high state which can easily be recognized by the microprocessor. In Appendix 1, the low state is called "modem input=0" and the high state is called "modem input=1." The input level as a zero or one is tested at each microprocessor clock cycle. It is presently preferred that the microprocessor run at color burst clock speed or 3.5796 Megahertz. The "counts" register records the number of clock cycles between each transition. Since the clock cycles much faster than the high frequency 2400 hertz several counts are accumulated between each transition. After each transition the value of the "count" register is compared to the threshold values to determine the frequency of the received signal. If the count register is in a low range, then the "value" is a zero if it is in an intermediate range, then the "value" is a one, and if it is in a high range then the signal is a start signal, for a new packet of data.

As can be seen in FIG. **2**, there are four half cycles for each low frequency or binary zero, **42-1**; **42-2**; **42-4**, and six half cycles for each higher frequency binary one, **42-2**. The microprocessor accordingly makes four or six time measurements before determining the valve of each binary bit. This helps eliminate errors, however, the data transmission speed can be increased by transmitting only four half cycles for each bit. The higher frequency binary one would then require less time to transmit than the lower frequency binary zero because its period is shorter.

When the microprocessor first begins receiving data over the telephone line, it waits until a high frequency 2400 hertz start signal is detected. Upon detecting the next following start bit at 1200 hertz, the microprocessor converts the rest of the data stream into a binary bit stream. After a packet has been transmitted and the error detection bits have been received, the processor tests the header to determine whether a positive address for the data packet has been received and then tests the error detection code against the data to determine if the data received is accurate. The header is used as an address to the RAM **20** where the error flag is retrieved. If the error flag at that address is set, then the new data is copied from a buffer into the player database at that address including the reset error flag. If the address is invalid, an error is detected, or the error flag is reset, then the player data base is not overwritten. These checks are the process subroutine of Appendix 1.

A reset error flag indicates that the corresponding player database has already been updated during the data transmission cycle. The reset error flag signals the end of a transmission cycle and prompts the microprocessor to indicate this to the user through the screen. The user then disconnects the acoustic coupler **28** and hangs up the telephone handset.

In the presently preferred embodiment, the process subroutine is executed during the start signal for the next data packet. The process subroutine can be performed while the start signal is being transmitted so that the microprocessor is ready to decode the next data packet before the start signal ends.

In summary, a data base is transferred from central location **34** to RAM **20** by means of the following procedure which is illustrated in FIG. **3** in the preferred sequence. As depicted by a block **50**, data base **51** is stored at central location **34** as the data base to be transmitted. As depicted by a block **52**, data base **51** is modulated at central location **34** by modulator **53** when the user of computer **10** sends a call-up signal to central location **34**. As depicted by a block **54**, the modulated data base is sent over telephone line **32** to telephone terminal **30** and, as depicted in block **56**, the flag bits at the memory locations of RAM **20** where the data base is to be stored are all set. As depicted by a block **58**, the data base is received, data packet after data packet, at telephone terminal **30** and, as depicted by a block **60**, it is demodulated by microprocessor **12**. As depicted by a block **62**, the error detection bits of each data packet are checked. If the error check is false (F), as depicted by a block **64**, the data packet is discarded. As depicted by a block **65**, the flag bit at the address in RAM **20** specified by the data packet is fetched, and as depicted by a block **66**, the fetched flag bit is checked if the error check is true (T). As depicted by a block **68**, if the checked flag bit is in a set state, the data packet is stored in RAM **20** at the specified address and, as depicted by a block **70**, the flag bit at the specified address is reset. As depicted by a block **72**, telephone line **32** is disconnected if the checked flag bit is already in a reset state, because this condition only obtains when all the data packets have already been received at telephone terminal **30**. Blocks **60** to **72** represent software operations performed under the control of microprocessor **12**.

It is presently preferred that the computer be used as a compact portable information display device. One application of the portable display device is as an information source at a baseball game, this is the application contemplated by Appendices 1 and 2. The entire device can be built into a foldable package no larger than a small stack of 5×8 cards. This can easily be slipped into a pocket or purse and brought to the grandstands at a baseball stadium. When the device is unfolded, the user has access to a variety of up-to-date and important statistics for all of the current season's players and teams in the major league. The arrow and soft keys allow the operator to interact with menus displayed on the screen to select precisely the statistics which he wants to view. Using only the previous, cursor direction and soft keys mentioned above, together with menu driven software like that diagrammed in Appendix 2, the operator can quickly and easily access a large variety of statistics. The computer can also include trivia questions answered by manipulating the keys.

The computer can also be adapted for different kinds of information. It can be used for football, basketball, or racing statistics, as well as updatable price information

from wholesale or retail catalogs, corporate telephone books, or flight and scheduling information. By interchanging the removable battery-powered cartridge **24**, a single computer can be used for a variety of applications. Since the program instructions are primarily stored in the ROM **18**, replacing the cartridge can completely change the screen menus and information available from the computer.

The central location is preferably a conventional telephone answering device with an endless tale loop, although a wide variety of other devices could be used. Current statistics of the desired variety are periodically compiled, formatted, and stored. To update a computer an operator selects the update function from the menu options on his screen, dials the appropriate telephone number from a telephone terminal, coupled the acoustic coupler to the speaker of the handset of the telephone terminal and waits. The telephone terminal sends a call-up signal to the central location and the central location in response opens, establishes or sets up a telephone connection between the telephone terminal and the endless tape loop or other signal source. The computer then receives the signals from the tape loop, adapts them to be compatible with the input signal format in microprocessor **12**, decodes them, and stores them as described above. By using the standard telephone network, a user can call the central location from any conventional telephone.

Only a few embodiments and variations have been disclosed in this description. The inventor intends in no way to abandon any subject matter thereby, nor to limit his invention to the embodiments disclosed. The scope of the invention extends to all subject matter within the scope of the claims as set forth below.

APPENDIX 3

```
; PRESTO SOFTWARE

STACK     EQU  0FFFFH

; DATABASE EQUATES FROM DATA.ASM
; EQUATES INTO DATABASE
;
;AVOCET SYSTEMS Z80 ASSEMBLER -  VERSION 1.03M  SERIAL #00200
;
;SOURCE FILE NAME: DATA.ASM
                                                PAGE 98
;---- SYMBOL TABLE ----
;
;ALE       0015          ENLEAST  0106
ILEGLENS  EQU   07C6H
INUMPITS  EQU   3C33H
;NLW       0012ALW       0015ENLWEST  0118
IMLLEN    EQU  07CAH
IPD  EQU  2351H
;NLWEST    0106ALWEST    00DF
IALNEWS   EQU  0450H
INLNEWS   EQU  0118H
IPNAM     EQU  48F5H
SDATAB    EQU   0010H
;DASIZ     5425
IALRES    EQU  006DH
INLRES    EQU  0010H
ITEAMNAM  EQU   5316H
;EALWEST   00F4
;IGSTATS   EQU  07CFH
INPD EQU  07CFH
EDATAB    EQU  5435H
IINITWL   EQU  0792H
INPNAM    EQU  3C35H
;NLE       0012ELEG      00DF
ILEG EQU  00CAH
INUMNON   EQU  3C31H
;          NLEAST   00F4

     WIDTH 80
; WRITTEN BY ROGER BOOTH
```

```
; WITH ASSISTANCE FROM:
;               GERRY SELDON
;               ROGER RUNNALLS
; COPYRIGHT 1989, JAMES WICKSTEAD DESIGN ASSOCIATES
;
; COMPANY NAME: JAMES WICKSTEAD DESIGN ASSOCIATES
;               185 RIDGEDALE AVE.
;               CEDAR KNOLLS, NJ
;               (201) 267-2007
;

TRUE EQU  1
FALSE     EQU  0

LCD  EQU  TRUE

; LCD TRUE = EXTERNAL LCD MONITOR INSTALL
; LCD FALSE = DESIGNED LCD DISPLAY ONLY
; CONSTANTS TO DEFINE ORGANIZATION OF DATA
MYNUMPLY  EQU  25   ;NUMBER OF PLAYER ON MY TEAM
MXTM EQU  32    ;MAX. NUMBER OF TEAMS
NUMDIV    EQU  4    ;NUMBER OF DIVISION ALE ALW NLE NLW

;SALE     EQU  0     ;START OF AL EAST
;SALW     EQU  7    ;START OF AL WEST
;SNLE     EQU  14   ;START OF NL EAST
;SNLW     EQU  20   ;START OF BL WEST
;TLEG     EQU  26   ;TOTAL NUMBER OF TEAMS


NLEGS     EQU  NUMDIV    ;4 DIVISIONS

HALFCHAR  EQU  '+'  ;HALF CHARACTER

; DISPLAY CONSTANTS
CR   EQU  0DH
LF   EQU  0AH

IPP  EQU  31H  ;CHARACTER FOR /1 /2 FOR PART INNINGS

CRUP EQU  5EH  ;CURSOR ARROW
CRDWN     EQU  76H  ;"
CRGHT     EQU  7EH  ;"
CRLFT     EQU  7FH  ;"
CRUPDN    EQU  7DH  ;CHARACTER FOR UP/DWN CURSOR

SCRNWID   EQU  26
;
;_____________________________________________________
;****************************************
;****************************************
; HARDWARE DISCRIPTION
;****************************************
;****************************************
;
; IO
;****************************************
; OUTPUT PORT
;****************************************
```

```
DSPDAT    EQU  1    ;DATA OUTPUT TO DISPLAY
LTCH EQU  0
;0 - ROW SELECT 0  (FUNCTION KEY SELECT)
;1 - ROW SELECT 1  (CURSOR KEYS) SEE BUFFER
;2 - OFF/ON MINUS SUPPLY OF MODEM -7 VOLTS?
;3 - OFF/ON POS SUPPLY OF MODEM 6 VOLTS
;4 - LC  LATCH CLOCK ONCE PER ROW
;5 - SC  SHIFT CLOCK ONCE PER DATA BYTE
;6 - MC  FRAME CLOCK  50HZ
;7 - DATA BIT TO START FRAME
LC   EQU  4
SC   EQU  5
SD   EQU  7
MC   EQU  6

; IN MODEM MODE,,, USE LATCH AS FOLLOWS
;0 - ROW SELECT 0  (FUNCTION KEY SELECT)
;1 - ROW SELECT 1  (CURSOR KEYS) SEE BUFFER
;2 - OFF/ON MINUS SUPPLY OF MODEM -7 VOLTS?  SHOULD BE ON
;3 - OFF/ON POS SUPPLY OF MODEM 6 VOLTS      SHOULD BE ON
;4 - LC  LATCH CLOCK ONCE PER ROW  USED AS MARK INDICATOR (0)
;5 - SC  SHIFT CLOCK ONCE PER DATA BYTE USED AS SPACE INDICATOR
(0)
;6 - MC  FRAME CLOCK  50HZ     X
;7 - DATA BIT TO START FRAME   X

 IF LCD
LCDSETRS  EQU  82H  ;READING BUSY
LCDCLRRS  EQU  02H  ;READ BUSY BIT

;CONTROL
;WRITE =
;D7 0
;D6 0
;D5 1/0 DISPLAY ON/OFF
;D4 1

;D3
;D2
;00 - CURSOR OFF,
;01 - CURSOR ON,
;10 - CURSOR OFF CHARACTER BLANK,
;11 - CURSOR BLANK

;D1 1/0 GRAPHIC MODES/CHARACTER
;D0 1/0 EXTERNAL CGEN/INTERNAL CGEN
 ENDIF

;************************************
; INPUT PORT
;************************************
BUFFER    EQU  00
; KEY PAD
; KEYS ARE ACTIVE LOW
;0 - RS0* F1   RS1*  UP
;1 - RS0* F2   RS1*  DOWN
;2 - RS0* F3   RS1*  LEFT
;3 - RS0* F4   RS1*  RIGHT
;4 - DATA IN FROM MODEM.. EDGE TO EDGE FROM MODEM
```

```
;5 - NC
;6 - NC
;7 - NC

ONE  EQU  01H
ZERO    EQU     00H

NUMBITS    EQU  8
MINCYC     EQU  40
MAXCYC     EQU  80
MIDCYC     EQU  60
     ORG 0000H
CODE:
;**************************************
;INITIALIZATION
;**************************************

     SUB  A
     DI
     JP   INIT
     ORG  08H
; RESTART 7 OUTCHR
OUTCH:
     JP   OUTCHR
     ORG  10H
CONV:
     ADD  A,L
     JR   NC,NIH
     INC  H
NIH:
     LD   L,A
     RET

;**************************************
; INTERRUPT CODE
;**************************************
     ORG 038H
     DI
     EX   AF,AF'
     EXX
; START OF INTERRUPT...
; GET LINE OF DATA OFFSET
; 20 BYTES..
     LD   A,(ITIME)
     INC  A
     AND  3FH
     LD   (ITIME),A
     JR   NZ,NKEYS  ;NO CHECK ON KEYS

     LD   A,(HERTZ)
     INC  A
     LD   (HERTZ),A

     LD   A,(LATCH)
     AND  0FEH
     OUT  (LTCH),A
; SELECT FUNCTION KEYS
     IN   A,(BUFFER)
     RLA
     RLA
```

```
      RLA
      RLA
      AND   0F0H
      LD    B,A         ;SAVE THEM IN B

      LD    A,(LATCH)
      AND   0FDH
      OUT   (LTCH),A
      IN    A,(BUFFER)
      AND   0FH         ;ONLY LOW 4 BITS..
      OR.   B

      LD    B,A
      LD    A,(KEY)
      XOR   B
      JR    Z,NKEYS         ;NO CHANGE ...
      LD    C,A
      LD    A,(KCHNG)
      OR    C
      LD    C,A
      LD    A,(KMASK)
      AND   C
      LD    (KCHNG),A ;WHAT CHANGED.
; KEY CHANGED..... SET FLAG
NCHNG:
      LD    A,B
      LD    (KEY),A         ;NEW KEY VALUE.
NKEYS:
; TOGGLE MCLK
      LD    A,(ITIME)
      RLA               ;SHIFT LEFT WITH CARRY
      AND   40H
      LD    B,A
      LD    A,(LATCH)
      AND   0BFH
      OR    B           ;TOGGLE MCLK    50HZ
      LD    (LATCH),A
CTN:
      LD    A,(ITIME)
;INTERRUPT TIMER
;COUNTS 0-63
; MULT BY 20 TO GET OFFSET INTO DISPLAY MEMORY
      LD    HL,DSPTBL ;LOOK AT TABLE TO FIND POSITION
      AND   A     ;CLEAR CARRY
      RLA         ;SHIFT LEFT
      RST   CONV
      LD    A,(HL)      ;LOW BYTE
      INC   HL
      LD    H,(HL)      ;HIGH BYTE
      LD    L,A
; HL POINTS TO DISPLAY.
      LD    C,DSPDAT
      LD    B,20
      OTIR

; CHECK IF BOT OF SCREEN?

      LD    A,(LATCH)
      LD    B,A   ;SAVE LATCH VALUE
```

```
      LD    A,(ITIME)
      CP    63
      JR    NZ,NSTRT   ;NOT START
      SET   SD,B
NSTRT:
      LD    A,B
      OUT   (LTCH),A
; OK TOGGLE BIT.
      OR    10H

;     SET   LC,A ;SET LATCH CLOCK HIGH

      OUT   (LTCH),A
      AND   04FH       ;SET LATCH CLOCK LOW

;     LD    A,(LATCH)

      OUT   (LTCH),A

      EXX

      EX    AF,AF'

      EI

      RETI

      ORG 0100H
BITPAIR:
      DB    01H,02H,04H,08H,10H,20H,40H,80H
;**************************************
;**************************************
; DISPLAY TABLE OFFSET FOR EACH LINE ADDRESS
; USED TO SPEED UP INTERRUPT ROUTINE
;**************************************
;**************************************
DSPTBL:
      DW    DSPADD
      DW    DSPADD+(20*01)
      DW    DSPADD+(20*02)
      DW    DSPADD+(20*03)
      DW    DSPADD+(20*04)
      DW    DSPADD+(20*05)
      DW    DSPADD+(20*06)
      DW    DSPADD+(20*07)
      DW    DSPADD+(20*08)
      DW    DSPADD+(20*09)
      DW    DSPADD+(20*10)
      DW    DSPADD+(20*11)
      DW    DSPADD+(20*12)
      DW    DSPADD+(20*13)
      DW    DSPADD+(20*14)
      DW    DSPADD+(20*15)
      DW    DSPADD+(20*16)
      DW    DSPADD+(20*17)
      DW    DSPADD+(20*18)
      DW    DSPADD+(20*19)
      DW    DSPADD+(20*20)
      DW    DSPADD+(20*21)
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        DW    DSPADD+(20*22)
        DW    DSPADD+(20*23)
        DW    DSPADD+(20*24)
        DW    DSPADD+(20*25)
        DW    DSPADD+(20*26)
        DW    DSPADD+(20*27)
        DW    DSPADD+(20*28)
        DW    DSPADD+(20*29)
        DW    DSPADD+(20*30)
        DW    DSPADD+(20*31)
        DW    DSPADD+(20*32)
        DW    DSPADD+(20*33)
        DW    DSPADD+(20*34)
        DW    DSPADD+(20*35)
        DW    DSPADD+(20*36)
        DW    DSPADD+(20*37)
        DW    DSPADD+(20*38)
        DW    DSPADD+(20*39)
        DW    DSPADD+(20*40)
        DW    DSPADD+(20*41)
        DW    DSPADD+(20*42)
        DW    DSPADD+(20*43)
        DW    DSPADD+(20*44)
        DW    DSPADD+(20*45)
        DW    DSPADD+(20*46)
        DW    DSPADD+(20*47)
        DW    DSPADD+(20*48)
        DW    DSPADD+(20*49)
        DW    DSPADD+(20*50)
        DW    DSPADD+(20*51)
        DW    DSPADD+(20*52)
        DW    DSPADD+(20*53)
        DW    DSPADD+(20*54)
        DW    DSPADD+(20*55)
        DW    DSPADD+(20*56)
        DW    DSPADD+(20*57)
        DW    DSPADD+(20*58)
        DW    DSPADD+(20*59)
        DW    DSPADD+(20*60)
        DW    DSPADD+(20*61)
        DW    DSPADD+(20*62)
        DW    DSPADD+(20*63)

CHARGEN:
        DB      000H,000H,000H,000H,000H,000H,000H,000H ; 0
        DB      07EH,081H,0A5H,081H,0BDH,099H,081H,07EH ; 1
        DB      07EH,0FFH,0DBH,0FFH,0C3H,0E7H,0FFH,07EH ; 2
        DB      036H,07FH,07FH,07FH,03EH,01CH,008H,000H ; 3
        DB      008H,01CH,03EH,07FH,03EH,01CH,008H,010H ; 4
        DB      01CH,03EH,01CH,07FH,07FH,03EH,01CH,03EH ; 5
        DB      008H,008H,01CH,03EH,07FH,03EH,01CH,03EH ; 6
        DB      000H,000H,018H,03CH,03CH,018H,000H,000H ; 7
        DB      0FFH,0FFH,0E7H,0C3H,0C3H,0E7H,0FFH,0FFH ; 8
        DB      000H,03CH,066H,042H,042H,066H,03CH,000H ; 9
        DB      0FFH,0C3H,099H,0BDH,0BDH,099H,0C3H,0FFH ; 10
        DB      0F0H,0E0H,0F0H,0BEH,033H,033H,033H,01EH ; 11
        DB      03CH,066H,066H,066H,03CH,018H,07EH,018H ; 12
        DB      0FCH,0CCH,0FCH,00CH,00CH,00EH,00FH,007H ; 13
        DB      0FEH,0C6H,0FEH,0C6H,0C6H,0E6H,067H,003H ; 14
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DB      099H,05AH,03CH,07EH,07EH,03CH,05AH,099H ; 15
DB      001H,007H,01FH,07FH,01FH,007H,001H,000H ; 16
DB      040H,070H,07CH,07FH,07CH,070H,040H,000H ; 17
DB      018H,03CH,07EH,018H,018H,07EH,03CH,018H ; 18
DB      066H,066H,066H,066H,066H,000H,066H,000H ; 19
DB      0FEH,0DBH,0DBH,0DEH,0D8H,0D8H,0D8H,000H ; 20
DB      07CH,0C6H,01CH,036H,036H,01CH,033H,01EH ; 21
DB      000H,000H,000H,000H,07EH,07EH,07EH,000H ; 22
DB      018H,03CH,07EH,018H,07EH,03CH,018H,0FFH ; 23
DB      018H,03CH,07EH,018H,018H,018H,018H,000H ; 24
DB      018H,018H,018H,018H,07EH,03CH,018H,000H ; 25
DB      000H,018H,030H,07FH,030H,018H,000H,000H ; 26
DB      000H,00CH,006H,07FH,006H,00CH,000H,000H ; 27
DB      000H,000H,003H,003H,003H,07FH,000H,000H ; 28
DB      000H,024H,066H,0FFH,066H,024H,000H,000H ; 29
DB      000H,018H,03CH,07EH,0FFH,0FFH,000H,000H ; 30
DB      000H,0FFH,0FFH,07EH,03CH,018H,000H,000H ; 31
DB      000H,000H,000H,000H,000H,000H,000H,000H ; 32
DB      00CH,01EH,01EH,00CH,00CH,000H,00CH,000H ; 33
DB      036H,036H,036H,000H,000H,000H,000H,000H ; 34
DB      036H,036H,07FH,036H,07FH,036H,036H,000H ; 35
DB      00CH,03EH,003H,01EH,030H,01FH,00CH,000H ; 36
DB      000H,063H,033H,018H,00CH,066H,063H,000H ; 37
DB      01CH,036H,01CH,06EH,03BH,033H,06EH,000H ; 38
DB      006H,006H,003H,000H,000H,000H,000H,000H ; 39
DB      018H,00CH,006H,006H,006H,00CH,018H,000H ; 40
DB      006H,00CH,018H,018H,018H,00CH,006H,000H ; 41
DB      000H,066H,03CH,0FFH,03CH,066H,000H,000H ; 42
DB      000H,00CH,00CH,03FH,00CH,00CH,000H,000H ; 43
DB      000H,000H,000H,000H,000H,00CH,00CH,006H ; 44
DB      000H,000H,000H,03FH,000H,000H,000H,000H ; 45
DB      000H,000H,000H,000H,000H,00CH,00CH,000H ; 46
DB      060H,030H,018H,00CH,006H,003H,001H,000H ; 47
DB      03EH,063H,073H,07BH,06FH,067H,03EH,000H ; 48
DB      00CH,00EH,00CH,00CH,00CH,00CH,03FH,000H ; 49
DB      01EH,033H,030H,01CH,006H,033H,03FH,000H ; 50
DB      01EH,033H,030H,01CH,030H,033H,01EH,000H ; 51
DB      038H,03CH,036H,033H,07FH,030H,078H,000H ; 52
DB      03FH,003H,01FH,030H,030H,033H,01EH,000H ; 53
DB      01CH,006H,003H,01FH,033H,033H,01EH,000H ; 54
DB      03FH,033H,030H,018H,00CH,00CH,00CH,000H ; 55
DB      01EH,033H,033H,01EH,033H,033H,01EH,000H ; 56
DB      01EH,033H,033H,03EH,030H,018H,00EH,000H ; 57
DB      000H,00CH,00CH,000H,000H,00CH,00CH,000H ; 58
DB      000H,00CH,00CH,000H,000H,00CH,00CH,006H ; 59
DB      018H,00CH,006H,003H,006H,00CH,018H,000H ; 60
DB      000H,000H,03FH,000H,000H,03FH,000H,000H ; 61
DB      006H,00CH,018H,030H,018H,00CH,006H,000H ; 62
DB      01EH,033H,030H,018H,00CH,000H,00CH,000H ; 63
DB      03EH,063H,07BH,07BH,07BH,003H,01EH,000H ; 64
DB      00CH,01EH,033H,033H,03FH,033H,033H,000H ; 65
DB      03FH,066H,066H,03EH,066H,066H,03FH,000H ; 66
DB      03CH,066H,003H,003H,003H,066H,03CH,000H ; 67
DB      01FH,036H,066H,066H,066H,036H,01FH,000H ; 68
DB      07FH,046H,016H,01EH,016H,046H,07FH,000H ; 69
DB      07FH,046H,016H,01EH,016H,006H,00FH,000H ; 70
DB      03CH,066H,003H,003H,073H,066H,07CH,000H ; 71
DB      033H,033H,033H,03FH,033H,033H,033H,000H ; 72
DB      01EH,00CH,00CH,00CH,00CH,00CH,01EH,000H ; 73
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    DB      078H,030H,030H,030H,033H,033H,01EH,000H ; 74
    DB      067H,066H,036H,01EH,036H,066H,067H,000H ; 75
    DB      00FH,006H,006H,006H,046H,066H,07FH,000H ; 76
    DB      063H,077H,07FH,07FH,06BH,063H,063H,000H ; 77
    DB      063H,067H,06FH,07BH,073H,063H,063H,000H ; 78
    DB      01CH,036H,063H,063H,063H,036H,01CH,000H ; 79
    DB      03FH,066H,066H,03EH,006H,006H,00FH,000H ; 80
    DB      01EH,033H,033H,033H,03BH,01EH,038H,000H ; 81
    DB      03FH,066H,066H,03EH,036H,066H,067H,000H ; 82
    DB      01EH,033H,007H,00EH,038H,033H,01EH,000H ; 83
    DB      03FH,02DH,00CH,00CH,00CH,00CH,01EH,000H ; 84
    DB      033H,033H,033H,033H,033H,033H,03FH,000H ; 85
    DB      033H,033H,033H,033H,033H,01EH,00CH,000H ; 86
    DB      063H,063H,063H,063H,07FH,077H,063H,000H ; 87
    DB      063H,063H,036H,01CH,01CH,036H,063H,000H ; 88
    DB      033H,033H,033H,01EH,00CH,00CH,01EH,000H ; 89
    DB      07FH,063H,031H,018H,04CH,066H,07FH,000H ; 90
    DB      01EH,006H,006H,006H,006H,006H,01EH,000H ; 91
    DB      003H,006H,00CH,018H,030H,060H,040H,000H ; 92
    DB      01EH,018H,018H,018H,018H,018H,01EH,000H ; 93
    DB      008H,01CH,036H,063H,000H,000H,000H,000H ; 94
    DB      000H,000H,000H,000H,000H,000H,000H,0FFH ; 95
    DB      00CH,00CH,018H,000H,000H,000H,000H,000H ; 96
    DB      000H,000H,01EH,030H,03EH,033H,06EH,000H ; 97
    DB      007H,006H,006H,03EH,066H,066H,03BH,000H ; 98
    DB      000H,000H,01EH,033H,003H,033H,01EH,000H ; 99
    DB      038H,030H,030H,03EH,033H,033H,06EH,000H ; 100
    DB      000H,000H,01EH,033H,03FH,003H,01EH,000H ; 101
    DB      01CH,036H,006H,00FH,006H,006H,00FH,000H ; 102
    DB      000H,000H,06EH,033H,033H,03EH,030H,01FH ; 103
    DB      007H,006H,036H,06EH,066H,066H,067H,000H ; 104
    DB      00CH,000H,00EH,00CH,00CH,00CH,01EH,000H ; 105
    DB      030H,000H,030H,030H,030H,033H,033H,01EH ; 106
    DB      007H,006H,066H,036H,01EH,036H,067H,000H ; 107
    DB      00EH,00CH,00CH,00CH,00CH,00CH,01EH,000H ; 108
    DB      000H,000H,033H,07FH,07FH,06BH,063H,000H ; 109
    DB      000H,000H,01FH,033H,033H,033H,033H,000H ; 110
    DB      000H,000H,01EH,033H,033H,033H,01EH,000H ; 111
    DB      000H,000H,03BH,066H,066H,03EH,006H,00FH ; 112
    DB      000H,000H,06EH,033H,033H,03EH,030H,078H ; 113
    DB      000H,000H,03BH,06EH,066H,006H,00FH,000H ; 114
    DB      000H,000H,03EH,003H,01EH,030H,01FH,000H ; 115
    DB      008H,00CH,03EH,00CH,00CH,02CH,018H,000H ; 116
    DB      000H,000H,033H,033H,033H,033H,06EH,000H ; 117
    DB      000H,000H,033H,033H,033H,01EH,00CH,000H ; 118
    DB      000H,000H,063H,06BH,07FH,07FH,036H,000H ; 119
    DB      000H,000H,063H,036H,01CH,036H,063H,000H ; 120
    DB      000H,000H,033H,033H,033H,03EH,030H,01FH ; 121
    DB      000H,000H,03FH,019H,00CH,026H,03FH,000H ; 122
    DB      038H,00CH,00CH,007H,00CH,00CH,038H,000H ; 123
    DB      018H,018H,018H,000H,018H,018H,018H,000H ; 124
    DB      007H,00CH,00CH,038H,00CH,00CH,007H,000H ; 125
    DB      06EH,03BH,000H,000H,000H,000H,000H,000H ; 126
    DB      000H,008H,01CH,036H,063H,063H,07FH,000H ; 127
    DB        0,0,0,0,0,0,0,0 ;used for temp storage for 80h and
above
```

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 PAGE


CITYNAM:
;     (5 BITS)
;RANGE 0-TOTLEG
;ALEAST
TEXTAL:
      DB    'AL',0
TEXTNL:
      DB    'NL',0
TEXTEAST:
      DB    'EAST',0
TEXTWEST:
      DB    'WEST',0


; END OF DATABASE PARAMETERS LOADED INTO RAM...
POSNUM:
; (4 BITS ) RANGE (0-12)
; POSITION NUMBER DEFINITION
;  POSITION
      DB    'P ' ;0 PITCHER
      DB    'C ' ;1 CATCHER
      DB    '1B' ;2 FIRST BASE
      DB    '2B' ;3  2 BASE
      DB    '3B' ;4 3 BASE
      DB    'SS' ;5 SHORT STOP
      DB    'LF' ;6 LEFT FIELD
      DB    'CF' ;7 CENTER FIELD
      DB    'RF' ;8 RIGHT FIELD
      DB    'DH' ;9 DESINATED HITTER
      DB    'OF' ;10 OUT FIELD
      DB    'IF' ;11 IN FIELD
      DB    '--' ;SPARE PLAYER
 PAGE


DOWNLOAD:
;     DB    '01234567890123456789'
      DB    'DOWNLOAD COMPLETE'
      DB    0FFH


 ;**********************************
 ;**********************************
 CLRSCRN:
 ;**********************************
 ;**********************************
 ; SUPER FAST CLEAR SCREEN ROUTINE
      PUSH HL
      PUSH DE
      PUSH BC
      PUSH AF

      LD    A,' '
      LD    (SCREEN),A
```

```
        LD    HL,SCREEN
        LD    DE,SCREEN+1
        LD    BC,SCRNSIZ-1


        LDIR

        SUB   A
        LD    (DISPLAY),A
        LD    HL,DISPLAY
        LD    DE,DISPLAY+1
        LD    BC,DISIZE-1
        LDIR

    IF LCD
        LD    A,10 ;REG 10 CURSOR LOW ADDRESS
        OUT   (LCDSETRS),A
        SUB   A
        OUT   (LCDCLRRS),A

        LD    A,11 ;REG 11 CURSOR LOW ADDRESS
        OUT   (LCDSETRS),A
        SUB   A
        OUT   (LCDCLRRS),A

        LD    A,12  ;CLEAR SCREEN
        OUT   (LCDSETRS),A


        LD    BC,43*16    ;6*8 CHARACTER MATRIX
                          ;256 PIXELS H = 42.6 /LINE
                          ;128 PIXEL V = 16 LINES
DCLRS:
        LD    A,' '
        OUT   (LCDCLRRS),A
        DEC   BC
        LD    A,B
        OR    C
        JR    NZ,DCLRS

    ENDIF
        LD    HL,0
        LD    (CURSOR),HL          ;HOME CURSOR
        JP    RESTORE         ;RESTORE REG.


;*****************************
;*****************************
OUTCHR:
;*****************************
;*****************************
; THIS ROUTINE PUTS THE CONTAIN OF ACC = ASCII 0-7F
; TO DISPLAY MEMORY @ LOCATION OF CURSOR.
; SEE CURSOR FOR DETAILS ON CURSOR POSITION

; ALL REGISTER ALL SAVED
        PUSH HL
        PUSH DE
        PUSH BC
        PUSH AF
```

```
; CHECK IF KEY WAS HIT
     LD   A,(KHIT)
     XOR  0FFH       ;SEE IF ANYONE KEY
     JP   NZ,RESTORE      ;ALREADY HIT.

     LD   A,(KCHNG)
     AND  A
     JR   Z,NKDET
     LD   B,A
     LD   A,(KEY)
     AND  B
     JP   NZ,NHITS   ;NO KEY  CONTINUE
     LD   A,(KEY)
     XOR  0FFH
     AND  B
CBI:
     RLA
     JR   NC,CBI          ;ONLY ONE KEY HIT

     AND  A
     JR   NZ,NHITS

; SAVE THE KEY THAT HIT...

     LD   A,(KEY)
     LD   (KHIT),A  ;SAVE WHAT WAS..

     JP   RESTORE
NHITS:
     SUB  A
     LD   (KCHNG),A ;GOING UP DON'T CARE
; KEY WENT UP, DON'T CARE.
NKDET:
     LD   HL,SCREEN
;CURSOR   DS   2     ; WHERE IF LD  BC(CURSOR)
;                    ; B = X CHARACTER POSITION (0-19)
;                    ; C = Y LINE NUMBER 0-7
     LD   BC,(CURSOR)
 IF LCD
; SET CURSOR ADDRESS
     PUSH HL
;
     LD   A,(HN)
     INC  A          ;ADD 1
     LD   E,A
     LD   D,0

     PUSH DE         ;SAVE NUMBER

     ADD  A,A  ;4 LINES DOWN. MULT BY 4
     ADD  A,A
     LD   L,A
     LD   H,0

     LD   A,C
     INC  A

DX:
     ADD  HL,DE
     DEC  A
```

```
      JR    NZ,DX
      AND   A
      POP   DE
      SBC   HL,DE
      EX    DE,HL
      POP   HL

; MULT BY (HN)...
; ADD X
      LD    A,B
      ADD   A,8         ;CENTER DISPLAY    4 LINES BY 8
                        ;CURSORS
      ADD   A,E
      LD    E,A
      JR    NC,NICD
      INC   D
NICD:
      LD    A,10 ;REG 10 CURSOR LOW ADDRESS
      OUT   (LCDSETRS),A
      LD    A,E
      OUT   (LCDCLRRS),A

      LD    A,11 ;REG 11 CURSOR LOW ADDRESS
      OUT   (LCDSETRS),A
      LD    A,D
      OUT   (LCDCLRRS),A
;
      LD    A,12 ;REG 12
      OUT   (LCDSETRS),A
; IF REVID = FF THEN ADD 40 H IF LETTER
      LD    A,(REVID)
      LD    D,A
      POP   AF
      PUSH  AF
      BIT   0,D
      JR    Z,NSOT
      CP    'A'
      JR    C,NSOT      ;< 'A'
      ADD   20H
NSOT:
      OUT   (LCDCLRRS),A
;
 ENDIF
      LD    A,C   ;GET X
; GET Y VALUE MULT BY SCRNWID....> 26
      ADD   A,A   ;MULT 2
      LD    D,A   ; D CONTAINS *2
      ADD   A,A   ;*4
      ADD   A,A   ;*8
      LD    E,A   ; E CONTAINS *8
      ADD   A,A   ;*16
      ADD   A,E   ; +8
      ADD   A,D   ; +2  => 26
      RST   CONV
; OK NOW ADD X * 8
      LD    A,B   ;ADD X VALUE
      RST   CONV

      POP   AF          ;RESTORE CHARACTER ...
      PUSH  AF          ;SAVE CHARACTER
```

```
    AND  7FH
    LD   (HL),A          ;TURN CHARACTER IN MEMORY
; GET WHICH CHARACTER ADDRESS..
; MULT BY 8 ASCII VALUE
    LD   HL,CHARGEN
    LD   E,A
    LD   D,0
    SLA  E
    RL   D
    SLA  E
    RL   D
    SLA  E
    RL   D
    ADD  HL,DE
; HL POINTS TO CHARACTER IN QUESTION
    LD   (CHARPO),HL     ;SAVE CHARACTER CGEN POSITION
; OK LET'S SET UP TO DRAW FIRST LINE OF CHARACTER
; NEED TO CALULATE POSITION INTO XY VALUE
; FIRST DO Y
; H = X CHARACTER POSITION (0-25)
; L = Y LINE NUMBER 0-7
    LD   HL,(CURSOR)
; H CONTAINS CHARACTER WHERE =26X
; L CONTAINS Y = 8*V
    LD   A,L
    ADD  A,A
    ADD  A,A
    ADD  A,A
    LD   C,A         ;X 8
;
; X = 26*H
;
    LD   A,H
    ADD  A,A  ; SIX TIMES
    LD   B,A
    ADD  A,A
    ADD  A,B
    LD   B,A         ;6 PIXEL/CHARACTER

    LD   (XY),BC

    LD   DE,(CHARPO)     ;GET CGEN ADDRESS

    LD   C,8         ;8 LINES OF DATA
CTOP:
    PUSH HL          ;SAVE XY

    LD   A,(REVID)   ;REVERSE VIDEO..
    LD   B,A
    LD   A,(DE)
    XOR  B

    LD   B,6         ;6 DOTS ACROSS

;   LD   A,(DE)

LOOPB:
    RR   A
    CALL C,PUTDOT
;   CALL NC,CLRDOT
;
```

```
     LD   HL,(XY)          ;MOVE OVER 1
     INC  H
     LD   (XY),HL
;INC X POSITION
     DJNZ LOOPB

     POP  HL    ;RESTORE XY
;    LD   HL,(XY)
     INC  L     ;INC Y
     LD   (XY),HL

     INC  DE          ;NEXT CHARACTER LINE

     DEC  C
     JR   NZ,CTOP

     LD   HL,(CURSOR)
     INC  H     ;INC X
     LD   A,H
     CP   SCRNWID
     JR   C,SLES
     LD   H,0
     INC  L
     LD   A,L
     CP   8
     JR   C,SLES
     LD   L,0
SLES:
     LD   (CURSOR),HL
RESTORE:
; RESTORE ALL REGISTERS
     POP  AF
     POP  BC
     POP  DE
     POP  HL
     RET

;*****************************
;*****************************
PUTDOT:
;*****************************
;*****************************
; THIS SUBROUTINE PUTS A DOT @ LOCATION POINTED BY X,Y REG
;
     PUSH HL
     PUSH DE
     PUSH BC
     PUSH AF
     LD   BC,(XY)
     CALL BITPO
     LD   A,(DE)
     OR   (HL)
     JR   WRSCRN
;*****************************
;*****************************
CLRDOT:
;*****************************
;*****************************
     PUSH HL
     PUSH DE
     PUSH BC
     PUSH AF
```

```
     LD   BC,(XY)
     CALL BITPO
     LD   A,(DE)          ;GET BIT MASK
     XOR  0FFH       ;COMPLEMENT MASK TO ERASE
     AND  (HL)       ;AND WITH DISPLAY
WRSCRN:
     LD   (HL),A          ;SAVE IT
     JP   RESTORE




; DISPLAY FORMAT
; 160X64 MATRIX
; EACH ROW HAS 20 BYTES
; BIT ASSIGNMENTS ARE AS FOLLOWS
; BIT 0 ->   1- 20
; BIT 1 ->  21- 40
; BIT 2 ->  41- 60
; BIT 3 ->  61- 80
; BIT 4 ->  81-100
; BIT 5 -> 101-120
; BIT 6 -> 121-140
; BIT 7 -> 141-160

;*****************************
;*****************************
BITPO:
;*****************************
;*****************************
; THIS SUBROUTINE FIND LOCATION IN MEMORY OF
; BIT POSITION POINTED TO BY B - X, C - Y PIXEL POSITION
; RETURNS WITH HL POINTING TO ADDRESS IN DISPLAY MEMORY
;          AND DE POINTING TO BIT MASK POSITION
;
; BC CONTAINS LOCATION DISTROYED..
; FIND X VALUE...
;
     LD   HL,DSPTBL
     LD   A,C        ;GET Y VALUE
     ADD  A,A
     RST  CONV

     LD   A,(HL)
     INC  HL
     LD   H,(HL)
     LD   L,A        ;HL POINTS TO START OF LINE
; OK NOW FIND WHICH BIT...

     LD   DE,BITPAIR

     LD   A,B
;
LOFX:
     SUB  20
     JR   C,XLESS
     INC  E
     JR   LOFX
;
```

```
XLESS:
     ADD  A,20       ;OFFSET INTO Y
     JP   CONV
INIT:
     LD   HL,STRAM   ;CLEAR RAM.
     LD   DE,STRAM+1
     LD   BC,ERAM-STRAM
LOOPF:
     SUB  A
     LD   (HL),A
     LDIR
BEGIN:
     LD   SP,STACK       ;RESET STACK POINTER

     IM 1            ;ENABLE INTERRUPT MODE 1, IE
                     ;EXECUTE INTERRUPT @ 38H
     LD   A,03H           ;INIT LATCH DATA TO $FF
     LD   (LATCH),A ;KEYPAD NOT SELECTED,+/- SUPPLY
                     ;ON AND
     OUT  (LTCH),A

     CALL CLRSCRN         ;CLEAR SCREEN ROUTINE

     LD   A,0FFH
     LD   (KMASK),A ;ENABLE ALL KEYS
     LD   (KHIT),A  ;CLEAR KEY HIT BYTE
;
     SUB  A
     LD   (REVID),A ;NORMAL SCREEN
; LOADS LEGLENS & MLLEN
;    LD   HL,SDATAB
;    LD   DE,RSDATAB          ;INITIAL VARIABLES IN RAM
;DASIZ    EQU  EDATAB-SDATAB
;    LD   BC,DASIZ
;;NUMDIV+NUMDIV+1
;    LDIR                ;INITIAL PARAMETERS
; INIT BLOCK FOR TEAM STANDINGS....
;
; 26 TEAMS
;
;***DATABASE TESTPATTERN
;    LD   DE,GAMSTND     ;GOING TO
;    LD   HL,INITWL ;BLOCK OF DATA

;    LD   A,(MLLEN+NUMDIV)
;    ADD  A,A
;    LD   C,A
;    LD   B,0
;    LD   BC,2*TLEG
;    LDIR ;UNSORTED...
;
; MAKE A LIST OF TEAMS IN ORDER
;
     LD   A,(MLLEN+NUMDIV)
     LD   B,A
     ADD  A,A
     LD   HL,DISPLAY+DBUFFER
     RST  CONV

;    LD   B,TLEG          ;NUMBER OF TEAMS
     SUB  A
     LD   C,A
```

```
;     LD    HL,TSTND
NXTM1:
      LD    (HL),A          ;LSB
      INC   HL
      LD    (HL),C          ;MSB
      INC   HL
      INC   A
      DJNZ  NXTM1

; CALULATE % WINS FOR ALL TEAMS

      SUB   A
      LD    (DISPLAY),A     ;START DOING PERCENTAGE OF TEAMS
NEXTEAM:
      LD    A,(DISPLAY)     ;COUNTER
      CALL  GETPER
; RESULTS IN TMP(0-1) LSB - MSB
      PUSH  HL        ;SAVE RESULTS

      LD    A,(DISPLAY)     ;GET TEAM NUMBER
      ADD   A,A  ;MULT BY 2
      LD    HL,DISPLAY+DBUFFER
      RST   CONV

      POP   DE    ;GET RESULTS

      LD    (HL),E
      INC   HL
      LD    (HL),D

      LD    A,(DISPLAY)
      INC   A
      LD    (DISPLAY),A

      LD    L,A       ;SAVE IT
      LD    A,(MLLEN+NUMDIV)     ;MAX VALUE
      DEC   A     ;TAKE 1 AWAY..
      CP    L
      JR    NC,NEXTEAM      ;> THAN CONTINUE.

;     CP    TLEG ;TOTAL NUMBER OF TEAMS
;     JR    C,NEXTEAM
; DONE....
; SORT BY HIGHEST PERCENTAGE
; FOR EACH DIVISION / LEAGUE

      SUB   A
      LD    (DISPLAY),A
LEGSORT:
; SORT BY HIGHEST PERCENTAGE....
; WHERE DISPLAY IS SAME FORMAT AS "LEAGUE"
      LD    A,(DISPLAY)
      LD    HL,LEGLENS      ;LENGTH OF LEAGUE
      RST   CONV       ;START OF LEAGUE OFFSET
; HL
      LD    C,(HL)          ;LENGTH OF DATA

      LD    A,(DISPLAY)
      LD    HL,MLLEN  ;GET OFFSET INTO PERCENT TABLE
      RST   CONV       ;BY LEAGUE
```

```
     LD   A,(HL)
     ADD  A,A  ;MULT BY 2
     PUSH AF        ;SAVE OFFSET FOR TEAM LIST

     LD   HL,DISPLAY+DBUFFER
     RST  CONV      ;GET TEAM PERCENTAGE START

;ADDRESS BY LEAGUE

; START OF DATA
     LD   (DISPLAY+SDAT),HL         ;START OF LIST

     LD   HL,DISPLAY+DBUFFER  ;+TLEG+TLEG
     LD   A,(MLLEN+NUMDIV)
     ADD  A,A
     RST  CONV

     POP  AF   ;FIND TEAM LIST ADDRESS
;    LD   HL,DISPLAY+DBUFFER+TLEG+TLEG
;    LD   HL,TSTND  ;TEAM STANDING LIST

     RST  CONV

     PUSH HL        ;SAVE ADDRESS
     PUSH BC        ;SAVE LENGTH

     LD   (DISPLAY+TDAT),HL   ;DATA SORTED BY TEAM NAME


; SORT PERCENTAGE AND TEAM NAME ACCORDINGLY
; DATA TO BE SORTED IN ORDER
; POINTED TO BY (DISPLAY+SDAT)
;           THE POINTERS ASSOCIATED WITH DATA
;           SORTED IN ORDER POINTED TO BY (DISPLAY+TDAT)

     SUB  A    ;MAX - MIN SORT
     CALL SORT
; OK COPY IN STANDINGS
     POP  BC   ;COUNT IN C
     POP  DE   ;ADDRESS OF DATA

     LD   B,C  ;PUT COUNT IN B
     RES  7,B
     LD   A,(DISPLAY)
     LD   HL,MLLEN  ;GET OFFSET INTO PERCENT TABLE
     RST  CONV      ;BY LEAGUE
     LD   A,(HL)         ;OFFSET GET.
     LD   HL,TSTND  ;POINT HL TO STANDING
     RST  CONV
CSTNDN:
     LD   A,(DE)    ;GET VALUE
     LD   (HL),A    ;PUT IN STANDING
     INC  HL   ;NEXT STANDING
     INC  DE        ;SKIP MSB
     INC  DE        ;NEXT STANDING
     DJNZ CSTNDN    ;DEC COUNT
     LD   A,(DISPLAY)
     INC  A
     LD   (DISPLAY),A
     CP   NLEGS          ;NUMBER OF LEAUGES
```

```
    JR   NZ,LEGSORT
;***DATABASE TESTPATTERN...ABOVE  TEAM STANDINGS

; INITIALIZE START OF PITCHERS ID'S
    LD   HL,1000        ;PITCHER START AFTER 64
    LD   (SPITCH),HL
; TOTAL NUMBER OF NONPITCHERS IN DATABASE
;    LD   HL,503
;    LD   (NUMNON),HL
; TOTAL NUMBER OF PITCHERS IN DATABASE
;    LD   HL,309
;    LD   (NUMPITS),HL
; SORT TEAMS...
    LD   HL,ROSTER ;POINTS TO ROSTER
; GO THOUGH TEAM NAMES AND FIND EACH OCCURS
    SUB  A
    LD   (TYPE),A  ;

    LD   A,(MLLEN) ;START WITH TEAM 1
    LD   C,A
LST:
    LD   DE,0
    LD   (PLAYER),DE    ;INIT PLAYERS NAME
    LD   B,0        ;TEAM LENGTH
LFTM:
; SAVE HL ROSTER POINTER
; SAVE BC   B = TEAM LENGTH, C = TEAM SEARCHING FOR
    PUSH HL
    PUSH BC
    LD   A,TMDATA  ;REQUEST TEAM DATA FROM DATABASE
    CALL GETDATA        ;GET TEAM NAME...
    LD   A,L
    AND  1FH        ;ONLY TEAM NAME REMOVE ERROR BIT AND QL
                    ; CHECK MAX LIMITS
    POP  BC
    POP  HL
    LD   D,A        ;SAVE TEAM NUMBER IN B
    LD   A,(MLLEN+NUMDIV)    ;GET LAST TEAM NUMBER
    CP   D          ;COMPARE AGAIN HIS TEAM NUMBER
    JR   C,SKHIM        ;OK SKIP HIM , NOT VALID TEAM NUMBER
    LD   A,C
    CP   D
    JR   NZ,SKHIM  ;NOT LOOKING FOR THIS TEAM
    LD   DE,(PLAYER)
    LD   (HL),E         ;SAVE PLAYERS NUMBER IN ROSTER
    INC  HL
    LD   (HL),D
    INC  HL
    INC  B          ;INC TEAM LENGTH
SKHIM:
    LD   DE,(PLAYER)
    INC  DE         ;NEXT PLAYER
    LD   (PLAYER),DE    ;SAVE PLAYERS ID
;   DETERMINE IF @ END OF NONPITCHERS
;       OR END OF PITCHERS
; SAVE HL WHICH POINTS TO ROSTER LIST
    PUSH HL         ;SAVE HL

    EX   DE,HL          ;HL CONTAINS PLAYER NUMBER
```

```
     LD   DE,(SPITCH)          ;> 1000 IS PITCHER
     AND  A
     SBC  HL,DE
     JR   NC,ISTSPIT      ;ITS A PITCHER
;
     LD   HL,(PLAYER)
     LD   DE,(NUMNON)     ; TOTAL NUMBER OF NONPITCHERS
     AND  A
     SBC  HL,DE
     JR   C,LFTM1         ;OK HL < DE SO CONTINUE LOOP
; OK DONE WITH THIS .. RESTART WITH PITCHERS
     LD   HL,(SPITCH)
     LD   (PLAYER),HL
LFTM1:
     POP  HL
     JR   LFTM
ISTSPIT:
     LD   DE,(NUMPITS)    ;TOTAL NUMBER OF PITCHERS
     AND  A
     SBC  HL,DE
     JR   C,LFTM1
; DONE WITH THIS TEAM.... NEXT TEAM
; NEXT TEAM
     LD   HL,TMLEG   ;TEAM LENGTH
     LD   A,C        ;TEAM NUMBER
     CALL CONV
     LD   (HL),B          ;NUMBER OF PLAYERS ON TEAM

     POP  HL

     INC  C

; CHECK LIMIT
     LD   A,(MLLEN+NUMDIV)     ;GET MAX VALUE
     DEC  A
     CP   C
     JR   NC,LST
;
; TMLEG+TLEG....
; NO TEAMS
;    LD   A,23       ;23 PLAYERS TEST...!!!
;    LD   (TMLEG+TLEG),A
;
; START OF PITCHERS ID'S

     JP   INTLCD

SORT:
     PUSH AF   ;SAVE A
; MAX SURE C > 0
     LD   A,C
     AND  A
     JR   NZ,PASTST
; NOTHING TO SORT... ERROR.
     POP  AF
     RET
PASTST:
     POP  AF
; ASSUMES C > 1 < 255
```

```
;
; A CONTAINS LIST LENGTH
; BIT 7 = 0 SORTS MAX - MIN
;         1 SORTS MIN - MAX
; BIT 6 IS USED IN ROUTINE

; ASSUMES (DISPLAY+SDAT) POINTS TO 16 BIT ARRAY TO BE ARRANGE
;     IN ORDER
;          (DISPLAY+TDAT) POINTS TO A POINTER ARRAY TO BE ARRANGE
;         BY ABOVES ORDER
;
LOOP:
     RES  6,A
     LD   IX,(DISPLAY+SDAT)    ;IX POINTS TO DATA
     LD   IY,(DISPLAY+TDAT)

     LD   E,(IX)
     LD   D,(IX+1)         ;GET START VALUE

     LD   B,C
     DEC  B
     RET  Z

BLOOP:
     INC  IX
     INC  IX          ;INC POINTERS NEXT WORD  DATA
     INC  IY
     INC  IY          ;INC POINTERS NEXT WORD  POINTER
     LD   L,(IX)
     LD   H,(IX+1)    ;GET NEW DATA
     AND  A
     SBC  HL,DE            ;DE CONTAINS TOP OF LIST
     JR   C,BIGR           ;TOP IS BIGGER  HL-DE < 0
; HL-DE > 0 TOP IS SMALLER
; NEW VALUE IS BIGGER
     BIT  7,A         ;CHECK DIRECTION
     JR   NZ,DOTHN
; ZERO SWAP IT
; REMEMBER THIS DATA.
SMLR:
     SET  6,A         ;SET BIT TO SWAP
     LD   (DISPLAY+REMEM),IX
     LD   (DISPLAY+REMEM+2),IY
     LD   E,(IX)
     LD   D,(IX+1)
     JR   DOTHN
BIGR:
; HL - DE < 0 TOP IS BIGGER
     BIT  7,A
     JR   NZ,SMLR     ;NEW IS BIGGER THAN TOP REMEMBER
DOTHN:
     DJNZ BLOOP
;
     BIT  6,A         ;TEST IF SWAP
     JR   Z,NSWP           ;NO SWAP

     LD   IX,(DISPLAY+REMEM)
     LD   IY,(DISPLAY+SDAT)
     PUSH AF
     LD   A,(IX)
```

```
      LD    D,A
      LD    A,(IY)
      LD    (IX),A
      LD    A,D
      LD    (IY),A

      LD    A,(IX+1)
      LD    D,A
      LD    A,(IY+1)
      LD    (IX+1),A
      LD    A,D
      LD    (IY+1),A

      LD    IX,(DISPLAY+REMEM+2)
      LD    IY,(DISPLAY+TDAT)

      LD    A,(IX)
      LD    B,A
      LD    A,(IY)
      LD    (IX),A
      LD    A,B
      LD    (IY),A
      ------------------------------------------------------------
      LD    A,(IX+1)
      LD    B,A
      LD    A,(IY+1)
      LD    (IX+1),A
      LD    A,B
      LD    (IY+1),A

      POP   AF
NSWP:
      LD    HL,(DISPLAY+TDAT)          ;INC POINTER
      INC   HL
      INC   HL
      LD    (DISPLAY+TDAT),HL

      LD    HL,(DISPLAY+SDAT)          ;INC POINTER
      INC   HL
      INC   HL
      LD    (DISPLAY+SDAT),HL
      ------------------------------------------------------------
      DEC   C

      JP    NZ,LOOP

      RET
      ------------------------------------------------------------
; PUTS UP PLAYERS NAME
;    CITY FOR STAT'S SCREEN. BASIC ON (PLAYER), (WLEAGUE)
HEADER:
      LD    HL,(PLAYER)
      CALL  SETNAMS          ;PUT OUT TEXT FROM CRUNCH DATABASE
      CALL  DOCR
      LD    A,(FLAG)   ;SEE IF DISPLAYING MY TEAM
      BIT   SHOW,A
      JR    Z,NOSHOW
      LD    HL,(PLAYER)      ;PLAYERS NUMBER
      SUB   A
      LD    (TYPE),A
      LD    A,TMDATA
      CALL  GETDATA
```

```
      AND   1FH
      JR    GCITYY
NOSHOW:
      LD    A,(WLEAGUE)
GCITYY:
      LD    DE,TEAMNAMES    ;POINTER TO CRUNCHED TEXT
      LD    L,A   ;HL COUNT
      LD    H,0
      CALL  TXTDCH          ;SEND THAT STUFF OUT
      JP    DOCR

; GOT THE LENGTH NOW, ADD UP ALL LENGTHS TO SEE
; WHERE DATA STARTS
; USING WLEAGUE AS TEAM NUMBER
; EXITS WITH

GETROFF:
      LD    HL,0
      LD    (TMP),HL  ;OFFSET VALUE INTO ROSTER

      LD    HL,TMLEG  ;LENGTH OF TEAM
      LD    B,0       ;COMPARE WITH WLEAGUE
FSOF:
      LD    A,(WLEAGUE)
      CP    B
      JR    Z,SOFF
      LD    A,(TMP)
      ADD   A,(HL)          ;ADD LENGTH OF TEAM
      LD    (TMP),A

      LD    A,(TMP+1)
      ADC   A,0
      LD    (TMP+1),A

      INC   HL        ;NEXT TEAM LENGTH
      INC   B
      JR    FSOF
SOFF:
; TMP = OFFSET INTO ROSTER
      LD    A,(HL)          ;GET CURRENT TEAM LENGTH
      LD    (TMP+2),A ;
; MULT BY 2 TEMP FOR OFFSET INTO ROSTER
      LD    HL,(TMP)
      SLA   L
      RL    H
      LD    (TMP),HL
; TMP+2 = LENGTH OF TEAM
; POINTING INTO TEAM NAME NOW. OFFSET BY C
      LD    DE,ROSTER
      ADD   HL,DE           ;GET OFFSET
      RET

;DATABASE CONSTANT TO GET DATA OUT
;GDATA    EQU  0    ;GAME
;RDATA    EQU  1    ;RUNS
;RBIDATA  EQU  2    ;RBI
;BBDATA   EQU  3    ;BASEONBALLS
;SODATA   EQU  4    ;STIKE OUT
;SBDATA   EQU  5    ;STOKEN BASE
;CSDATA   EQU  6    ;COTCH STEALING
;ABDATA   EQU  7    ;AT BAT
;B2DATA   EQU  8    ;2B
```

```
;B3DATA    EQU  9     ;3B
;HRDATA    EQU  10    ;HR
;TMDATA    EQU  11    ;TEAM
;HDATA     EQU  12    ;HIT
;EDATA     EQU  13    ;ERROR

GDATA      EQU  0
SODATA     EQU  1
BBDATA     EQU  2
HDATA      EQU  3
ABDATA     EQU  4
TMDATA     EQU  5

WADATA     EQU  6
ERDATA     EQU  7
KDATA      EQU  8
HADATA     EQU  9
WINDATA    EQU  10
IPDATA     EQU  11
LOSDATA    EQU  12
GSDATA     EQU  13
CGDATA     EQU  14
SVDATA     EQU  15
SHODATA    EQU  16

 RDATA     EQU  6
 RBIDATA   EQU  7
 SBDATA    EQU  8
 CSDATA    EQU  9
 B2DATA    EQU  10
 B3DATA    EQU  11
 HRDATA    EQU  12
 EDATA     EQU  13

 ERRDATA   EQU  17   ;DATA LOCATION ERROR BIT
 QLDATA    EQU  18   ;QUALIFY BIT

 P1WHERE:
      DB   05   ;G   1070 APPEARS
      DB   2    ;SO  2597 PBSTRIKEOUTS
      DB   3    ;BB  2056 PBASEONBALLS
      DB   10   ;H   4256 PHITS
      DB   13   ;AB  14053
      DB   15   ;TEAM     26   WITH QL AND ERROR IN PLACE

      DB   0    ;WA  2355    WALKSALLOWED
      DB   1    ;ER  4096
      DB   4    ;K   5000 PSTRIKEOUTS
      DB   6    ;HA  8191 HITSALLOWED
      DB   7    ;W   511 WINS
      DB   8    ;IP  7356*3 INNINGPITCHED
      DB   7    ;L   313 LOST
      DB   11   ;GS  1070 STARTS
      DB   11   ;CG  751 COMPLETEGAMES
      DB   12   ;SV  341 SAVES
      DB   14   ;SHO 110 SHUTOUTS

PLWHERE:
      DB   7    ;G   1070 APPEARS
      DB   3    ;SO  2597 PBSTRIKEOUTS
      DB   4    ;BB  2056 PBASEONBALLS
```

```
      DB    16    ;H    4256 PHITS
      DB    20    ;AB   14053
      DB    00    ;TEAM      26  NA

      DB    0     ;WA   2355     WALKSALLOWED
      DB    1     ;ER   4096
      DB    6     ;K    5000 PSTRIKEOUTS
      DB    9     ;HA   8191 HITSALLOWED
      DB    13    ;W    511 WINS
      DB    12    ;IP   7356*3 INNINGPITCHED
      DB    15    ;L    313 LOST
      DB    10    ;GS   1070 STARTS
      DB    17    ;CG   751 COMPLETEGAMES
      DB    19    ;SV   341 SAVES
      DB    22    ;SHO  110 SHUTOUTS

; TREND OFFSET..
PTWHERE:
      DB    00    ;G    1070 APPEARS
      DB    00    ;SO   2597 PBSTRIKEOUTS
      DB    00    ;BB   2056 PBASEONBALLS
      DB    00    ;H    4256 PHITS
      DB    00    ;AB   14053
      DB    00    ;TEAM      26

      DB    5     ;WA   2355     WALKSALLOWED
      DB    4     ;ER   4096
      DB    0     ;K    5000 PSTRIKEOUTS
      DB    2     ;HA   8191 HITSALLOWED
      DB    1     ;W    511 WINS
      DB    0     ;IP   7356*3 INNINGPITCHED
      DB    0     ;L    313 LOST
      DB    00    ;GS   1070 STARTS
      DB    00    ;CG   751 COMPLETEGAMES
      DB    2     ;SV   341 SAVES
      DB    00    ;SHO  110 SHUTOUTS


NP1WHERE:
      DB    0     ;G
      DB    4     ;SO   =      8 /189          12/2597
      DB    3     ;BB   =      8 /170          12/2056
      DB    11    ;H    =      9 /257          13/4256
      DB    7     ;AB   =     10 /750          14/14053
      DB    9     ;TEAM      =      5 / 26           NA

      DB    1     ;R
      DB    2     ;RBI  =      8 /190          12/2293
      DB    5     ;SB   =      8 /130          10/938
      DB    6     ;CS   =      8 /<255         10/<1024
      DB    12    ;2B   =      7 / 67          10/793
      DB    8     ;3B   =      6 / 36           9/312
      DB    13    ;LHR  =      6 / 61          10/755
      DB    9     ;E    =      9 / <512        11/<2048
      DB    00
      DB    00
      DB    00
      DB    00
      DB    00
```

```
      DB    00

; TREND INFO.
NPTWHERE:
      DB    0     ;G
      DB    0     ;SO  =      8 /189          12/2597
      DB    0     ;BB  =      8 /170          12/2056
      DB    3     ;H   =      9 /257          13/4256
      DB    2     ;AB  =     10 /750          14/14053
      DB    0     ;TEAM      =      5 / 26           NA

      DB    0     ;R
      DB    1     ;RBI =      8 /190          12/2293
      DB    0     ;SB  =      8 /130          10/938
      DB    0     ;CS  =      8 /<255         10/<1024
      DB    0     ;2B  =      7 / 67          10/793
      DB    0     ;3B  =      6 / 36           9/312
      DB    3     ;LHR =      6 / 61          10/755
      DB    0     ;E   =      9 / <512        11/<2048


NPLWHERE:
      DB    0     ;G
      DB    6     ;SO  =      8 /189          12/2597
      DB    4     ;BB  =      8 /170          12/2056
      DB    17    ;H   =      9 /257          13/4256
      DB    10    ;AB  =     10 /750          14/14053
      DB    00    ;TEAM      =      5 / 26           NA

      DB    1     ;R
      DB    3     ;RBI =      8 /190          12/2293
      DB    7     ;SB  =      8 /130          10/938
      DB    8     ;CS  =      8 /<255         10/<1024
      DB    13    ;2B  =      7 / 67          10/793
      DB    11    ;3B  =      6 / 36           9/312
      DB    14    ;LHR =      6 / 61          10/755
      DB    15    ;E   =      9 / <512        11/<2048
;*********************************
BMASKS:
      DW    01H   ; 0
      DW    03H   ; 1
      DW    07H   ; 2
      DW    0FH   ; 3
      DW    1FH   ; 4
      DW    3FH   ; 5
      DW    7FH   ; 6
      DW    0FFH  ; 7
      DW    1FFH  ; 8
      DW    3FFH  ; 9
      DW    7FFH  ; A
      DW    0FFFH      ; B
      DW    1FFFH      ; C
      DW    3FFFH      ; D
      DW    7FFFH      ; E
      DW    0FFFFH     ; F
```

```
;  xx SHIFT BYTE
; BIT 7-4 MASK POINTER.
; BITS 0-3 NUMBER OF TIMES TO SIZE MAX 15
P1SHIFT:
     DB   61H  ;G   1070 APPEARS
     DB   70H  ;SO  2597 PBSTRIKEOUTS
     DB   70H  ;BB  2056 PBASEONBALLS
     DB   80H  ;H   4256 PHITS
     DB   93H  ;AB  14053
     DB   61H  ;TEAM     26

     DB   70H  ;WA  2355    WALKSALLOWED
     DB   70H  ;ER  4096
     DB   80H  ;K   5000 PSTRIKEOUTS
     DB   80H  ;HA  8191 HITSALLOWED
     DB   51H  ;W   511 WINS
     DB   0A5H ;IP  7356*3 INNINGPITCHED
     DB   57H  ;L   313 LOST
     DB   51H  ;GS  1070 STARTS
     DB   57H  ;CG  751 COMPLETEGAMES
     DB   55H  ;SV  341 SAVES
     DB   35H  ;SHO 110 SHUTOUTS

;  xx SHIFT BYTE
; BIT 7-4 MASK POINTER.
; BITS 0-3 NUMBER OF TIMES TO SIZE MAX 15
PTSHIFT:
     DB   00H  ;G   1070 APPEARS
     DB   00H  ;SO  2597 PBSTRIKEOUTS
     DB   00H  ;BB  2056 PBASEONBALLS
     DB   00H  ;H   4256 PHITS
     DB   00H  ;AB  14053
     DB   00H  ;TEAM     26

     DB   70H  ;WA  2355    WALKSALLOWED
     DB   70H  ;ER  4096
     DB   83H  ;K   5000 PSTRIKEOUTS
     DB   87H  ;HA  8191 HITSALLOWED
     DB   53H  ;W   511 WINS
     DB   0A0H ;IP  7356*3 INNINGPITCHED
     DB   00H  ;L   313 LOST
     DB   00H  ;GS  1070 STARTS
     DB   00H  ;CG  751 COMPLETEGAMES
     DB   51H  ;SV  341 SAVES
     DB   00H  ;SHO 110 SHUTOUTS

;  xx SHIFT BYTE
; BIT 7-4 MASK POINTER.
; BITS 0-3 NUMBER OF TIMES TO SIZE MAX 15
PLSHIFT:
     DB   0A5H ;G   1070 APPEARS
     DB   0B0H ;SO  2597 PBSTRIKEOUTS
     DB   0B4H ;BB  2056 PBASEONBALLS
     DB   0C1H ;H   4256 PHITS
     DB   0D1H ;AB  14053
     DB   00   ;TEAM     26  NA

     DB   0B0H ;WA  2355    WALKSALLOWED
     DB   0B4H ;ER  4096
     DB   0C0H ;K   5000 PSTRIKEOUTS
     DB   0C0H ;HA  8191 HITSALLOWED
     DB   087H ;W   511 WINS
     DB   0E0H ;IP  7356*3 INNINGPITCHED
```

```
      DB    080H ;L    313 LOST
      DB    0A5H ;GS   1070 STARTS
      DB    096H ;CG   751 COMPLETEGAMES
      DB    080H ;SV   341 SAVES
      DB    060H ;SHO 110 SHUTOUTS
;   xx SHIFT BYTE
; BIT 7-4 MASK POINTER.
; BITS 0-3 NUMBER OF TIMES TO SIZE MAX 15
NP1SHIFT:
      DB    70H  ;G
      DB    70H  ;SO  =      8 /189          12/2597
      DB    70H  ;BB  =      8 /170          12/2056
      DB    80H  ;H   =      9 /257          13/4256
      DB    090H ;AB  =     10 /750          14/14053
      DB    060H ;TEAM      =      5 / 26           NA

      DB    070H ;R
      DB    070H ;RBI =      8 /190          12/2293
      DB    070H ;SB  =      8 /130          10/938
      DB    070H ;CS  =      8 /<255         10/<1024
      DB    061H ;2B  =      7 / 67          10/793
      DB    052H ;3B  =      6 / 36           9/312
      DB    050H ;LHR =      6 / 61          10/755
      DB    087H ;E   =      9 / <512        11/<2048

;   xx SHIFT BYTE
; BIT 7-4 MASK POINTER.
; BITS 0-3 NUMBER OF TIMES TO SIZE MAX 15
NPTSHIFT:
      DB    00H  ;G
      DB    00H  ;SO  =      8 /189          12/2597
      DB    00H  ;BB  =      8 /170          12/2056
      DB    80H  ;H   =      9 /257          13/4256
      DB    090H ;AB  =     10 /750          14/14053
      DB    000H ;TEAM      =      5 / 26           NA

      DB    000H ;R
      DB    070H ;RBI =      8 /190          12/2293
      DB    070H ;SB  =      8 /130          10/938
      DB    000H ;CS  =      8 /<255         10/<1024
      DB    000H ;2B  =      7 / 67          10/793
      DB    000H ;3B  =      6 / 36           9/312
      DB    052H ;LHR =      6 / 61          10/755
      DB    000H ;E   =      9 / <512        11/<2048

;   xx SHIFT BYTE
; BIT 7-4 MASK POINTER.
; BITS 0-3 NUMBER OF TIMES TO SIZE MAX 15

NPLSHIFT:
      DB    0B0H ;G
      DB    0B0H ;SO  =      8 /189          12/2597
      DB    0B4H ;BB  =      8 /170          12/2056
      DB    0C0H ;H   =      9 /257          13/4256
      DB    0D0H ;AB  =     10 /750          14/14053
      DB    00H  ;TEAM      =      5 / 26           NA

      DB    0B4H ;R
      DB    0B0H ;RBI =      8 /190          12/2293
      DB    094H ;SB  =      8 /130          10/938
```

```
      DB    096H ;CS  =      8 /<255          10/<1024
      DB    090H ;2B  =      7 / 67           10/793
      DB    086H ;3B  =      6 / 36            9/312
      DB    092H ;LHR =      6 / 61           10/755
      DB    0A5H ;E   =      9 / <512         11/<2048
;**********************************
; PACKET SIZE FOR EACH DATABASE..
STYPE:
      DB    14    ;NONPITCHER PACKET
      DB    16    ;PITCHER PACKET
      DB    19    ;LIFETIME NONPITCHER PACKET
      DB    23    ;LIFETIME PITCHER PACKET
      DB    6     ;TREND INFO
      DB    6     ;TREND INFO
; MASK DATA AND SHIFT
SHIFTPAT:
      DW    NP1SHIFT
      DW    P1SHIFT
      DW    NPLSHIFT
      DW    PLSHIFT
      DW    NPTSHIFT
      DW    PTSHIFT
; OFFSET INTO PACKETS
WHEREPAT:
      DW    NP1WHERE
      DW    P1WHERE
      DW    NPLWHERE
      DW    PLWHERE
      DW    NPTWHERE
      DW    PTWHERE
; FAKE DATA.. FOR TESTING....
STDATA:
      DW    NPD
      DW    PD
      DW    LNONPITCH
      DW    LPITCHER
      DW    TNONPITCH
      DW    TPITCHER

  INCLUD DATABASE.ASM

 COPTREND:
 ; COPY IN TREND DATA TO NEW LOCATION
 ; SET ERROR BIT
      LD    HL,0
      LD    (PLAYER),HL
 ; START NUMBER OF PLAYER
 ; FIRST .... NONPITCHERS
 NVANON:
      LD    A,HDATA
      CALL REWRITE          ;WRITE CURRENT DATA INTO TREND
      LD    A,ABDATA
      CALL REWRITE
      LD    A,HRDATA
      CALL REWRITE
      LD    A,SBDATA
      CALL REWRITE
      LD    A,RBIDATA
```

```
     CALL REWRITE

     SUB  A
     LD   (TYPE),A
     LD   A,TMDATA
     CALL GETDATA
     LD   A,L
     OR   40   ;ERROR FLAG
     LD   L,A

     CALL WRTDATA          ;WRITE ERROR BIT IN CURRENT DATA

     LD   HL,(PLAYER)
     INC  HL
     LD   (PLAYER),HL
; CHECK IF PITCHER OR NONPITCHER

     LD   DE,(NUMNON)      ;LOAD NUMBER OF NONPITCHER
     AND  A
     SBC  HL,DE
     JR   C,NVANON  ;NEXT NON PITCHER PLEASE

; PITCHERS DATA MOVE INTO TRENDS

     LD   HL,(SPITCH)
     LD   (PLAYER),HL      ;GO THROUGH PITCHERS NOW..

; PITCHERS STUFF
DPIT:
     LD   A,WINDATA
     CALL REWRITE          ;COPY PITCHERS DATA INTO TREND INFO.
     LD   A,SVDATA
     CALL REWRITE
     LD   A,ERDATA
     CALL REWRITE
     LD   A,IPDATA
     CALL REWRITE
     LD   A,HADATA
     CALL REWRITE
     LD   A,WADATA
     CALL REWRITE
     SUB  A
     LD   (TYPE),A  ;CURRENT DATABASE
     LD   A,TMDATA  ;GET TEAM WHICH INCLUDES QL AND ERR BITS
     CALL GETDATA
     LD   A,L
     OR   40H       ;SET ERROR BITS
     LD   L,A
     CALL WRTDATA

     LD   HL,(PLAYER)
     INC  HL
     LD   (PLAYER),HL

     LD   DE,(NUMPITS)
     AND  A
     SBC  HL,DE
     JR   C,DPIT

     RET
```

```
; GET CURRENT DATA REQUESTED BY ACC
; ASSUMES PLAYER AND TYPE IS SET UP CORRECTLY

REWRITE:
     PUSH AF
     SUB  A
     LD   (TYPE),A  ;CURRENT DATA.
     POP  AF
     CALL GETDATA        ;GET FROM CURRENT DATABASE HITS
     LD   A,2
     LD   (TYPE),A  ;SET TO TREND
     JP   WRTDATA
     LD   HL,1      ;SET ERROR BIT
     SUB  A
     LD   (TYPE),A  ;INTO CURRENT DATABASE

     LD   A,ERDATA
     LD   (REQUEST),A
     JP   WRTDATA        ;WRITE ERROR BIT IN CURRENT DATA



SHFTPT:
     LD   HL,SHIFTPAT
     RST  CONV
     LD   A,(HL)
     INC  HL
     LD   H,(HL)
     LD   L,A

     LD   A,(REQUEST)
     RST  CONV

; NOW ADD REQUEST.....
     LD   A,(HL)         ;LSB IS NUMBER OF TIMES TO SHIFT DE
                    ;RIGHT
     RET


PRTDATA:
     LD   A,(TYPE)  ;0,1,2
     AND  03H
     ADD  A,A       ;0,2,4
     INC  A         ;1,3,5
     LD   DE,(SPITCH)    ;START OF PITCHERS ID'S
     LD   HL,(PLAYER)    ;PLAYERS ID
     AND  A         ;CLEAR CARRY
     SBC  HL,DE          ; PITCHER OR NONPITCHER
     JR   NC,NPITCHR     ;NON-PITCHER
     DEC  A         ;NONPITCHER INC A - 0,2,4
     LD   HL,(PLAYER)    ;NONPITCHER
NPITCHR:
     LD   (TBASE),A      ;SAVE TYPE... OF DATABASE 0-5
     PUSH HL        ;SAVE VALUE  * TIMES TO MULTPLY

     LD   HL,STYPE       ;GET SIZE OF DATA PACKET
```

```
    RST   CONV
; HL POINTING TO SIZE INFORMATION
    LD    C,(HL)          ;BC = SIZE OF PACKET
    LD    B,0
; SEE HOW MANY TIMES TO MULTPLY TO GET OFFSET FROM
; START OF A DATABASE
    POP   HL    ;NUMBER OF PACKETS OFF START
    CALL MULTPLY

    LD    DE,(TMP)   ;GET RESULTS OF MULTPLY

    LD    A,(TBASE)  ;RESTORE TYPE OF DATABASE.
    ADD   A,A
    LD    (TBASE),A       ;SAVE TYPE * 2

    LD    HL,STDATA ;LOCATION OF START THIS DATABASE
    RST   CONV
    LD    A,(HL)
    INC   HL
    LD    H,(HL)
    LD    L,A
    ADD   HL,DE           ;POINTING TO DATA. BLOCK IN QUESTION

    EX    DE,HL           ;DE POINTING TO LOCATION

    LD    A,(TBASE)  ;RESTORE TYPE*2 OF DATABASE

    LD    HL,WHEREPAT
    RST   CONV

    LD    A,(HL)
    INC   HL
    LD    H,(HL)
    LD    L,A

    LD    A,(REQUEST)
    RST   CONV
; NOW ADD REQUEST.....
    LD    A,(HL)          ;OFFSET TO DE

    EX    DE,HL           ;HL ADDRESS TO DATA START
    RST   CONV       ;ADD OFFSET
    RET        ;HL POINTS TO DATA...
WRTDATA:
; OK WRITE DATA IN HL
; FORMAT THIS DATA...
; DATA IN DE...
    PUSH DE         ;SAVE DATA
    CALL SHFTPT          ;A CONTAINS SHIFT AND ROLATE VALUE
; RETURNS SHIFT VALUE FOR DATA
    LD    (TMP),A
    RRA
    RRA
    RRA
    AND   1EH
    LD    HL,BMASKS
    RST   CONV
    LD    A,(HL)
    INC   HL
    LD    H,(HL)
```

```
      LD    L,A

      POP   DE
SLFTP:
      AND   0FH
      JR    Z,NSHFTIT ;DON'T SHIFT IT
      SLA   L
      RL    H
      SLA   E
      RL    D
      DEC   A
      JR    SLFTP
NSHFTIT:
; OK DATA
      LD    A,0FFH
      XOR   L
      LD    L,A
      LD    A,0FFH
      XOR   H
      LD    H,A         ;COMPLEMENT DATA MASK
      PUSH  HL          ;SAVE COMPLEMENTED DATA MASK
      PUSH  DE          ;DATA VALUE

      CALL  PRTDATA
; HL POINTS TO DATA....
      POP   BC          ;RETURN DATA
      POP   DE          ;RETURN COMPLEMENTED DATA MASK

      LD    A,(HL)
      AND   E
      OR    C
      LD    (HL),A
      INC   HL
      LD    A,(HL)
      AND   D
      OR    B
      LD    (HL),A
      RET

GETBA:
      LD    A,HDATA           ;GET HITS
      CALL  GETDATA
      PUSH  HL
      LD    A,ABDATA
      CALL  GETDATA
      POP   DE
      PUSH  HL    ;SAVE @ BATS
      EX    DE,HL
      LD    BC,2000
      CALL  MULTPLY
      POP   HL
      JP    DIVIDE
GETHR:
      LD    A,HRDATA
      JP    GETDATA
GETRBI:
      LD    A,RBIDATA
      JP    GETDATA
GETSO:
      LD    A,SODATA
      JP    GETDATA
```

```
GETH:
     LD   A,HDATA
     JP   GETDATA
GETK:
     LD   A,KDATA
     JP   GETDATA
GETSV:
     LD   A,SVDATA
     JP   GETDATA
GETWIN:
     LD   A,WINDATA
     JP   GETDATA
GETERA:
     LD   A,ERDATA
     CALL GETDATA
     PUSH HL   ;SAVE IT
     LD   A,IPDATA
     CALL GETDATA
     POP  DE
     PUSH HL
     EX   DE,HL
     LD   BC,2000*3*9          ;<<<<< ERA...
     CALL MULTPLY
     POP  HL
     JP   DIVIDE
GETPR:
     LD   A,IPDATA
     CALL GETDATA
     PUSH HL         ;SVAE IP
     LD   A,HADATA
     CALL GETDATA
     PUSH HL
     LD   A,WADATA
     CALL GETDATA
     POP  DE
     ADD  HL,DE
     POP  DE
     PUSH HL
     EX   DE,HL
     LD   BC,2000*3
     CALL MULTPLY
     POP  HL
     JP   DIVIDE
PITSORT:
     DW   GETERA          ;FUNCTION
     DB   80H        ;TYPE SORT, MIN-MAX
     DW   GETK
     DB   00         ;MAX - MIN
     DW   GETSV
     DB   00
     DW   GETWIN
     DB   00
     DW   GETPR
     DB   00
BATSORT:
     DW   GETBA
     DB   00
     DW   GETHR
     DB   00
```

```
     DW    GETRBI
     DB    00
     DW    GETSO
     DB    00
     DW    GETH
     DB    00


; ENTER WITH NUMBER TO SORT FOR..
;0 -ERA  SORT MIN - MAX
;1 - K'S  SORTED MAX-MIN
;2 - SV  SORTED MAX-MIN
;3 - WINS SORTED MAX
;4 - PITCHING RATIO

;5 - BA AVERAGE
;6 - HR
;7 - RBI
;8 - SO
;9 - H



WHOQUAL:
     LD    (CATSCRN),A     ;SAVE WHICH CATAGORY SORTING FOR.

     LD    HL,(SPITCH)
ABVPIT    EQU  (BATSORT-PITSORT)/3    ;THIS SHOULD = 5?
     CP    ABVPIT          ;PITCHERS OR NONPITCHERS?

     JR    C,LDPTCH        ;LOAD PLAYERS STARTING WITH
     LD    HL,00           ;NONPITCHERS DATABASE START
LDPTCH:
     LD    (PLAYER),HL

     LD    B,A
     ADD   A,A
     ADD   A,B        ;MULT BY 3
     LD    HL,PITSORT      ;FUNCTION AND TYPE OF SORT
     RST   CONV
     LD    E,(HL)          ;GET FUNCTION
     INC   HL
     LD    D,(HL)
     INC   HL
     LD    A,(HL)          ;MAX-MIN    MIN-MAX SORT
     LD    (TSORT),A
     LD    (FUNCTION),DE
; WRITE THE DATA TO DATABASE IN QUESTION....
; LET'S MAKE A LIST OF ALL PLAYERS THAT HAVE QL BIT SET
; MOVE INTO DISPLAY+DBUFFER MEMORY
; ENTER WITH PLAYER @ START OF MEMORY
; DISPLAY(0) POINTER OF NEXT PLAYER
; DATA -> DISPLAY+2 -
     SUB   A
     LD    (DISPLAY+PRT1),A
     LD    (TYPE),A
     LD    HL,0
LCHK:
     LD    A,TMDATA   ;GET TEAM NAME
; WHICH CONTAINS QL BIT
```

```
     CALL GETDATA
     LD   A,(MLLEN+NUMDIV)     ;GET MAX TEAM NAME
     LD   B,A
     LD   A,L
     AND  1FH
     CP   B
     JR   NC,NEXTBI ;NO GOOD , CITY NAME TOO BIG
     BIT  5,L       ;QL BIT IS
     JR   Z,NEXTBI

     LD   A,(DISPLAY+PRT1)
     LD   HL,DISPLAY+DBUFFER
     ADD  A,A
     JR   NC,NIH5
     INC  H
NIH5:
     RST  CONV

     LD   DE,(PLAYER)
     LD   (HL),E
     INC  HL
     LD   (HL),D

     LD   A,(DISPLAY+PRT1)
     INC  A
     LD   (DISPLAY+PRT1),A
NEXTBI:
     LD   HL,(PLAYER)
     INC  HL
     LD   (PLAYER),HL
; DETERMINE IF PITCHER OR NONPITCHER
     LD   DE,(SPITCH)
     AND  A
     SBC  HL,DE
     JR   NC,PCHER  ;IT A PITCHER
     LD   HL,(PLAYER)     ;GET NONPITCHER NUMBER
     LD   DE,(NUMNON)     ;TOTAL NUMBER OF NONPITCHER
     AND  A
     SBC  HL,DE
     JR   C,LCHK
     JR   CATSORT
PCHER:
     LD   DE,(NUMPITS)
     AND  A
     SBC  HL,DE
     JR   C,LCHK
;*****************************************
; THIS ROUTINE SORTS PLAYER NAMES STORED IN
; DISPLAY+DBUFFER
; LENGTH OF ARRAY = DISPLAY+PRT1
; HL CONTAIN THE FUNCTION CALL THAT THIS PLAYER
;    STAT NEEDS TO BE GENERATED...
; A CONTAINS 0 - SORT MAX - MIN OR 80H FOR MIN TO MAX
CATSORT:
; LIST IS IN DISPLAY+2, MAX VALUE IN DISPLAY
; LET'S GO GENERATE ERA
     SUB  A
     LD   (TYPE),A  ;CURRENT SEASON
     LD   (DISPLAY+PRT2),A
;
```

```
; IF DISPLAY = 0 THEN DON'T DO ANYTHING
      LD    A,(DISPLAY+PRT1)
      LD    (NLIST),A
      AND   A
      RET   Z           ;NO SORT..
LPROCS:
      LD    A,(DISPLAY+PRT2)
      LD    HL,DISPLAY+DBUFFER
      ADD   A,A
      JR    NC,NIH3
      INC   H
NIH3:
      RST   CONV
      LD    E,(HL)
      INC   HL
      LD    D,(HL)
      LD    (PLAYER),DE

      CALL GETFUNC
; DATA IN HL
      EX    DE,HL           ;DATA IN DE
      LD    HL,DISPLAY+DBUFFER
      LD    A,(DISPLAY+PRT2)
      RST   CONV
      LD    A,(DISPLAY+PRT2)
      RST   CONV
      LD    A,(DISPLAY+PRT1)
      RST   CONV
      LD    A,(DISPLAY+PRT1)
      RST   CONV
      LD    (HL),E
      INC   HL
      LD    (HL),D

      LD    A,(DISPLAY+PRT2)
      INC   A
      LD    (DISPLAY+PRT2),A

      LD    B,A
      LD    A,(DISPLAY+PRT1)
      CP    B
      JR    NZ,LPROCS       ;CONTINUE UNTIL DONT
; NUMBER TO SORT
      LD    C,A

      LD    HL,DISPLAY+DBUFFER
      LD    (DISPLAY+TDAT),HL         ;PLAYER NAMES
      LD    A,(DISPLAY+PRT1)
      RST   CONV
      LD    A,(DISPLAY+PRT1)
      RST   CONV
      LD    (DISPLAY+SDAT),HL         ;PLAY

      LD    A,(TSORT)


      CALL SORT
; OK FIRST 10 MOVE THEM....
      LD    BC,2*10
      LD    HL,DISPLAY+DBUFFER
```

```
      LD    DE,LISTP
      LDIR

      LD    A,(DISPLAY+PRT1)     ;HOW MANY
      CP    10
      JR    C,LESS10
      LD    A,10
LESS10:
      LD    (NLIST),A       ;WHO MANY IN LIST
      RET

GETFUNC:
      LD    HL,(FUNCTION)
      JP    (HL)

; REQUEST SHOULD BE THE SAME.
GETDATA:
      LD    (REQUEST),A     ;SAVE REQUEST
; CHECK IF LIFETIME
      LD    A,(TYPE)
      AND   03H
      CP    1     ;LIFETIME
      JR    NZ,NLIFE  ;NOT LIFE TIME
;  GET LIFETIME + CURRENT
      CALL NLIFE      ;GET LIFE TIME
      PUSH HL         ;SAVE DATA
      SUB   A
      LD    (TYPE),A
      CALL NLIFE
      POP   DE        ;RESTORE LIFETIME
      ADD   HL,DE           ;ADD CURRENT
      LD    A,1       ;RESTORE TYPE TO LIFETIME
      LD    (TYPE),A
      RET
NLIFE:
; TYPE = 0 1 2
; 0 = CURRENT STATS
; 1 = LIFE TIME STATS
; 2 = TREND STATS
; (SPITCH) ID##'S THAT START PITCHERS
; (PLAYER) = PLAYERS ID
; SHIFTPAT TABLE OF ADDRESS TO SHIFT AND MASK INFO
; WHEREPAT TABLE OF ADDRESS TO OFFSET INTO PACKET INFO
; STYPE TABLE OF PACKET SIZES IN DATABASE ORDER DESCIBED BELOW
; STDATA TABLE OF ADDRESS TO START OF DATABASES
; TBASE IS USED TO RETRIAN DATABASE WE ARE LOOKING @
; THERE ARE 6 DATABASES
; 1 NONPITCHERS CURRENT DATABASE
; 2 PITCHERS CURRENT DATABASE
; 3 NONPITCHERS LIFETIME DATABASE
; 4 PITCHERS LIFETIME DATABASE
; 5 NONPITCHERS TREND DATABASE
; 6 PITCHERS TREND DATABASE

     CALL PRTDATA         ;POINT TO DATA


     LD    A,(HL)         ;LOAD HL WITH DATA.
     INC   HL
     LD    H,(HL)
```

```
     LD   L,A

     EX   DE,HL      ;SAVE IN DE   DATA IN DE . NOW DO SHIFT

     LD   A,(TBASE)       ;RESTORE TYPE * 2
     CALL SHFTPT

     LD   (TMP),A
     AND  0FH
     JR   Z,DSHFT
      LD   B,A
SRGHT:
     SRL  D
     RR   E
     DJNZ SRGHT
DSHFT:
; NOW MASK OF BITS...
     LD   A,(TMP)
     RRA
     RRA
     RRA
     AND  1EH        ;TOP NIBBLE * 2

     LD   HL,BMASKS ;GET 16 BIT MASK PATTERN
     RST  CONV

     LD   A,E
     AND  (HL)       ;LSB
     LD   E,A
     INC  HL
     LD   A,D        ;MSB
     AND  (HL)
     LD   D,A

     EX   DE,HL           ;DATA IN HL

     RET

;GET PERCENT WIN'S
GETPER:
     ADD  A,A        ;MULT BY 2
     LD   HL,GAMSTND
     RST  CONV
     EX   DE,HL           ;DE POINTING TO WINS.
; CALULATE WIN/WIN+LOST PERCENTAGE
; TO DETERMINE QUICK STANDINGS...
; SCRATCH PAD BEING SCREEN OR DISPLAY BUFFER
     LD   A,(DE)     ;GET WINS
     LD   C,A  ;BC = WINS
     LD   B,0
     LD   HL,2000    ;HL 1000  USE EXTRA BIT TO ROUND OFF
     PUSH DE
     CALL MULTPLY         ;WIN*1000
     POP  DE   ;GET BACK WINS
     LD   A,(DE)     ;GET WINS
     LD   L,A
     LD   H,0
     INC  DE
     LD   A,(DE)     ;GET LOSES
```

```
      RST  CONV ;ADD WINS AND LOSES
; HL CONTAINS WIN+LOSTS
      JP   DIVIDE     ;WIN*1000/(WIN+LOSES)

; INITIALIZE 61830 LCD DISPLAY BOARD

INTLCD:

 IF LCD
      LD   HL,INITLCD
      LD   B,LOW(ELIST-INITLCD)
NXBIT:
      LD   C,LCDSETRS
      OUTI              ;SET REGISTER
      LD   C,LCDCLRRS
      OUTI              ;SEND DATA
      JR   NZ,NXBIT

INITLCD:
      DB   00
      DB   30H  ;0 CHARACTER MODE
      DB   01
      DB   75H  ;1 8X8 CHARACTER MATRIX
      DB   02
HN:
      DB   41   ;2 42 CHARACTER/LINE
      DB   03
      DB   3FH  ;3 64 COLUMN
      DB   04
      DB   01H  ;4 CURSOR ADDRESS
      DB   08
      DB   00   ;8 START ADDRESS OF DISPLAY
      DB   09
      DB   00   ;9 START ADD OF DSP HIGH BYTE
      DB   10
      DB   00   ;10 START ADD OF CURSOR LOWER
      DB   11
      DB   00   ;11  ""  HIGH
ELIST:

 ENDIF

      EI                ;ENABLE INTERRUPT..

      LD   HL,0
      LD   (CURSOR),HL
; SHOULD OUTCHR INC X,Y?
      SUB  A
      LD   (KCHNG),A
      DEC  A
      LD   (KHIT),A
      JP   SMAIN              ;GOTO START..


KEY2:
      DI

; CLEAR ROW SELECT...
```

```
;4 - LC  LATCH CLOCK ONCE PER ROW
;5 - SC  SHIFT CLOCK ONCE PER DATA BYTE
;6 - MC  FRAME CLOCK  50HZ
;7 - DATA BIT TO START FRAME

; OK SHUT DOWN LCD
     LD   B,21
; CLEAR ROW
     SUB  A
CROW:
     OUT  (DSPDAT),A
     DJNZ CROW

     LD   B,65
CRLT:
     LD   A,10H
     OUT  (LTCH),A

     SUB  A
     OUT  (LTCH),A
     OUT  (DSPDAT),A     ;SEND ZERO DATA TO SHIFT.
     DJNZ CRLT
; TURN ON + POWER SUPPLY TO MODEM...
;3 - OFF/ON POS SUPPLY OF MODEM 6 VOLTS
     SUB  A          ;TURN ON +/- SUPPLY..
     OUT  (LTCH),A
     LD   (LATCH),A ;TURN THEM ALL TO ZERO..

*****************************************************************

*                                                  *
*    carrier detect routine                                  *
*    dis-able interrupts                               *
*                                                  *
*****************************************************************

CARDET:
; INIT
     LD   BC,0
     LD   HL,0
     LD   DE,0

     EXX
     LD   HL,DISPLAY      ;POINT INTO SCREEN MEMROY
     LD   B,0
     LD   DE,0
     EXX
     ; PUT TEST LIGHT OUT HERE INDICATING NO CARRIER

     LD   A,30H
     OUT  (LTCH),A
; H CONTAINS VALUE TO WRITE TO PORT
; L CONTAINS LAST VALUE
; C CONTAIN NUMBER OF CYCLES @ LAST FREG.
; B X COUNTER
; E NUMBER OF CYCLE PER BIT CELL
; D CONTAINS BYTE INFORMATION

; exchange registers
; HL POINTS TO LOCATION TO PUT DATA. (INBUF)= 8800H
```

```
;    L IS ONLY INCREMENTED
; B = BIT NUMBER 0= START
;                1-X = NUMBER OF BITS
;                WHERE X = NUMBITS
; C = TEMP BUFFER.

GOTCAR:


; PUT TEST LIGHT ON HERE INDICATING CARRIER DETECT


;     LD   A,(LATCH)
;     AND  01FH
;     LD   (LATCH),A
;     OUT  (LTCH),A

; C CONTAINS NUMBER OF CYCLES
                    ;3 CYCLES = 1
                    ;2 CYCLES = 0 @ 600 BAUD
                    ;ASSUMING SPACE = 1200HZ
                  ;          MARK  = 1800HZ
KEEPLK:
     CALL CHKCYC
     JP   C,CARDET  ;IF SCREWED UP THEN TRY OVER (AND OVER) AGAIN
     LD   (TMP),A
     LD   E,02
     LD   H,20H
     CP   A,MIDCYC  ;SEE IF A ZERO OR ONE
     JP   C,ITMARK  ;IF NOT A ZERO THEN ITS A MARK
     LD   H,10H
     LD   E,1
ITMARK:
; GET OUTPUT VALUE
     LD   A,H
     CP   L    ;SEE IF CHANGED?
     JR   Z,SBORF   ;SAME AS BEFORE
     LD   L,H  ;MAKE SAME
     LD   C,0FFH
SBORF:
     INC  C    ;INC CYCLE COUNT
     LD   A,L
     OUT  (LTCH),A  ;OUTPUT BIT
; TEST IF BIT ?
     LD   A,C
     CP   E    ;SAVE
     JR   C,KEEPLK  ;KEEP GOING...
     LD   C,0FFH          ;RESET C BACK TO FF
; = > THAN...
; OK IF SHOULD BE START THEN
     EXX
     LD   A,B       ;CHECK BIT CELL = START BIT?
     EXX
     AND  A
     JR   NZ,COLLECT
     LD   A,E
     AND  01   ;SHOULD BE ZERO!
     JR   Z,SKIP
; FORCE SO ALWAY LOOK
```

```
     LD   C,3  ;MAX NUMBER...
     JR   KEEPLK
COLLECT:
     LD   A,E
     RRA       ;SHOULD BE 1 OR 2...
     RR   D    ;ROLL CARRY INTO LSB OF D REG
; SEE IF BYTE IS COMPLETE?
SKIP:
     LD   A,D
     EXX
     LD   C,A        ;SAVE CHARACTER
     INC  B
     LD   A,B
     CP   NUMBITS+1 ;NUMBER OF BITS + 1
     JR   C,KPLK
     LD   B,0
     LD   A,C
     LD   (HL),A
     CP   0FFH       ;SEE IT FF
     JR   NZ,NPE
     INC  D
     LD   A,D
     CP   3          ;3 FF'S IN A ROW..
     JR   C,NEXITM  ;NOT 3 DON'T EXIT
; OK ALL DONE DOWN LOADING...
     JR   DOEXIT          ;DO EXIT ROUTINE

NPE:
     SUB  A
     LD   D,A        ;RESET FF COUNTER
NEXITM:
     INC  L
KPLK:
     EXX
     JP   KEEPLK
DOEXIT:
     CALL CLRSCRN         ;CLEAR SCREEN
     LD   HL,804H    ; MIDDLE OF SCREEN
;    LD   L,4
     LD   (CURSOR),HL
     LD   HL,DOWNLOAD
     CALL LINEOUT
     JP   BEGIN
;
*********************************************************************
; SUBROUTINE TO PUT OUT LINE OF INFORMATION
; POINTED TO BY (CURSOR)
; HL POINTS TO DATA.
; A AND HL ARE DESTORIED.
*********************************************************************
LINEOUT:
     LD   A,(HL)
     CP   0FFH
     RET  Z          ;RETURN IF 0FFH
     RST  OUTCH
     INC  HL
     JR   LINEOUT
```

```
CHKCYC:
     CALL GETCYC          ; THIS CALL IS USED TO GET ACTUAL TIME
     JR   C,LSTCAR  ; IF WAVE DURATION IS TOO LONG THEN LOST
     LD   A,B
     CPL            ; COMPLIMENT FOR COUNT
     CP   A,MINCYC
     JP   C,LSTCAR  ; IF WAVE DURATION SAYS TOO SHORT THEN LOST
     CP   A,MAXCYC
     JP   NC,LSTCAR ; IF WAVE DURATION SAYS TOO LONG THEN LOST
     AND  A         ; CLEAR CARRY IF ALL IS WELL
     RET
LSTCAR:
     SCF
     RET

*****************************************************************
*                                                               *
*     GETCYC:  GET CYCLE TIME                                   *
*     ENTERED: NO DATA BUT MUST SHORTLY FOLLOW FALLING EDGE     *
*     RETURNS: B reg =  (&HFF-COUNT) IF THE CARRY IS CLEAR      *
*           CARRY WILL BE SET IF B = 0                          *
*                                                               *
*     THIS ROUTINE MEASURES THE TIME FROM ENTRY TO THE          *
*     FALLING EDGE OF THE MODEM SIGNAL                          *
*                                                               *
*     IT MUST BE CALLED SHORTLY AFTER A FALLING EDGE            *
*     IN ORDER TO BE ACCURATE                                   *
*****************************************************************
;
GETCYC:
      LD   B,0
 WTRISE:
      IN   A,(BUFFER)
      AND  10H
      JR   NZ,WTFALL
      DJNZ WTRISE
      JP   NOCARR
 WTFALL:
      IN   A,(BUFFER)
      AND  10H
      JR   Z,FINCYC
      DJNZ WTFALL
      JP   NOCARR
 FINCYC:
      AND  A
      RET
 NOCARR:
      SCF
      RET


 ;*****************************
 ;*****************************
 ; SET NAME
 ;*****************************
 ;*****************************
 SETNAMS:
      PUSH BC
```

```
        LD    BC,PNAM          ;PITCHERS NAMES
        LD    DE,(SPITCH)      ;START OF PITCHERS
        AND   A
        SBC   HL,DE
        JR    NC,INA

        LD    HL,(PLAYER)
        LD    BC,NPNAM
INA:
        PUSH  BC
        POP   DE
        POP   BC
        JR    TXTDCH
SPOOLER:
; ENTER WITH HL = NUMBER
        LD    DE,BEGIN   ;CRUNCHED PLAYERS NAMES
TXTDCH:
        LD    C,0
NSPLYER:
        LD    A,H
        OR    L
        JR    Z,DECOM
        DEC   HL         ;NEXT PLAYERS NAME
        LD    A,(DE)           ;GET BYTE NAME LENGTH
        AND   0FH
        ADD   A,E        ;ADD TO CURRENT NAME
        LD    E,A
        JR    NC,NSPLYER
        INC   D
NIDE:
        JR    NSPLYER
DECOM:
; OK POINT HL TO BUFFER
;    SCREEN:
; DE POINTS TO DATA TO BE DECRUNCHED
; HL SCREEN          ;POINT TEXT TO SCREEN
        LD    A,(DE)
        AND   0FH  ;LENGTH OF TEXT
        ADD   A,E
        LD    B,A  ;SAVE END OF LIST
        LD    C,1

; DE-COMPRESS TEXT POINTED TO BY DE
; INTO BUFFER POINTED TO BY HL
; FOR LENGTH B
;
; RULES
; MOST FREQUENT LETERS
; A,D,E,H,I,L,N,O,R,T,S,U
; NUMBER ASSIGNMENTS
; 0 1 2 3 4 5 6 7 8 9 A B
; C - ESCAPE INTO OTHER CHARACTERS
; D - ESCAPE INTO NUMBERS
; E - ESCAPE INTO OTHER SYMBOLS
; WHERE ESCAPE "C"
; B,C,F,G,J,K,M,P,Q,V,W,X,Y,Z, , ,
; 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
; WHERE ESCAPE 'D'
; 0,1,2,3,4,5,6,7,8,9,:,;,<,=,>,?
; 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
```

```
; WHERE ESCAPE 'E'
;  ,!,",#,$,%,&,',(,),*,+,,,-,.,/
DELOOP:
     LD   HL,BASEL  ;BASE CHARACTER
     CALL GETDCHR        ;GET CHARACTER FROM COMPRESSION
     CP   LOW(ESCC-BASEL)          ;RANGE OF BASE STUFF
     JR   NC,OTHSET ;ESCAPE FUNCTION >
GIVE:
     RST  CONV ;ADD TO BASE
     LD   A,(HL)     ;GET VALUE
     BIT  1,C  ;DETERMINE IF RETURN OR NOT
     RET  NZ
     RST  OUTCH      ;PUT THE STUFF TO THE SCREEN
     LD   A,E
     CP   B
     JR   NZ,DELOOP
     RET
OTHSET:
     SUB  LOW(ESCC-BASEL)          ;WHICH ONE?
; 0,1,2,3
     ADD  A,A        ;MULT BY 2
     LD   HL,GTBLP   ;GET LIST OF OPTIONS
     RST  CONV       ;CONVERT IT. ADD  TO BASE VAUE
     LD   A,(HL)          ;GET NEW TABLE ADDRESS LOW
     INC  HL
     LD   H,(HL)          ;GET NEW TABLE HIGH ADD
     LD   L,A
     CALL GETDCHR         ;GET NEXT NIBBLE
     JR   GIVE
GTBLP:
     DW   ESCC
     DW   ESCD
     DW   ESCE
GETDCHR:
     LD   A,(DE)
     BIT  0,C  ;SEE IF TOPHALF, OR BOTTOM
     JR   Z,BOTHALF
     RES  0,C
     RRA
     RRA
     RRA
     RRA
     INC  DE
     JR   HALF
BOTHALF:
     SET  0,C
HALF:
     AND  0FH  ;LOWER NIBBLE
     RET
BASEL:
     DB   041H,044H,045H,048H,049H,04CH,04EH
     DB   04FH,052H,054H,053H,055H,020H
ESCC:
     DB   042H,043H,046H,047H,04AH,04BH,04DH,050H
     DB   051H,056H,057H,058H,059H,05AH,00DH,020H
ESCD:
     DB   030H,031H,032H,033H,034H,035H,036H,037H
     DB   038H,039H,03AH,03BH,03CH,03DH,03EH,03FH
ESCE:
     DB   021H,027H,023H,040H,024H,025H,026H,027H
```

```
     DB   028H,029H,02AH,02BH,02CH,02DH,02EH,02FH

;BASEL:
;    DB   'ADEHILNORTSU '
;ESCC:
;    DB   'BCFGJKMPQVWXYZ'
;    DB   CR,'  '
;ESCD:
;    DB   '0123456789:;<=>?'
;ESCE:
;    DB   '!"#$%&()*+,'
;    DB   '-./'

; ENTER WITH NUMBER IN HL
; DE WITH THE NUMBER TO DIV BY
; RESULT IS HL REMAINER
; A = ASCII HOPEFULLY 0-9
; BIT 0 OF B SET WILL CHECK FOR '0' AND IF Z THEN SPACE
BCDCONV:
     LD   A,'0'
LP1000:
     AND  A
     SBC  HL,DE
     JR   C,IW1000
     INC  A
     JR   LP1000
IW1000:
     ADD  HL,DE
     CP   '0'        ;CHECK IF ZERO
     JR   NZ,SETB0   ;NOPE DISPLAY IT
     BIT  0,B
     JP   NZ,OUTCH   ;DISPLAY ALL ZERO
     LD   A,' '           ;DISPLAY SPACE INSTEAD
     JP   OUTCH
SETB0:
     LD   B,1        ;ALL ZERO AFTER WILL DISPLAY
     JP   OUTCH



;*** DATABASE NEED TO CHANGE THIS PROGRAM...
;    CONSTANTS CHANGE....
MSKOFF:
; ENTER WITH LEAGUE
;RETURNS STANDINGS IN LEAGUE
     PUSH HL   ;SAVE HL
     LD   HL,MLLEN+2      ;START OF OTHER DIVISION
     SUB  (HL) ;SNLE      ;STRT NAT. EST
     JR   NC,INATL
     ADD  A,(HL)     ;SNLE
     DEC  HL
     SUB  (HL) ;SALW
     JR   NC,EPOP    ;RET NC
APOP:
     ADD  A,(HL)
EPOP:
     POP  HL
     RET
INATL:
```

```
      ADD   A,(HL)
      INC   HL
      SUB   (HL)
      JR    NC,EPOP
      ADD   A,(HL)
      DEC   HL
      SUB   (HL)
      JR    EPOP
;     SUB   SNLW-SNLE ;STRT NL WEST
;ADD A,(HL)
;
;     RET   NC
;     ADD   SNLW-SNLE
;     RET
GETLEND:
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
      LD    HL,MLLEN+1      ;POINTS TO END OF LEAGUE
      JR    EELEG
GETLEAL:
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
      LD    HL,LEGLENS      ;LENGTH OF LEAGUE/DIVISION
EELEG:
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
      LD    A,(LEAGUE)
GETLEN:
      PUSH  HL
      LD    HL,MLLEN+2
      CP    (HL) ;SNLE      ;START OF NATIONAL LEAGUE
      JR    NC,INAT
      DEC   HL
      CP    (HL) ;SALW
      JR    C,EPOP
;     RET   C
BPOP:
      POP   HL
      INC   HL
      RET
INAT:
      POP   HL
      INC   HL
      INC   HL
      PUSH  HL
      LD    HL,MLLEN+3      ;SNLW
      CP    (HL) ;SNLW
      JR    C,EPOP
      JR    BPOP
;
;     INC   HL
;     RET
;KEY DS    1
; ACTIVE LOW SENSE
;0 - UP
;1 - DOWN
;2 - LEFT
;3 - RIGHT
;4 - F1
;5 - F2
;6 - F3
;7 - F4
;KCHNG     DS    1
```

```
; INTERRUPT WRITTEN ABOVE

;KEY DS   1
; ACTIVE LOW SENSE
;0 - UP
;1 - DOWN
;2 - LEFT
;3 - RIGHT
;4 - F1
;5 - F2
;6 - F3
;7 - F4
;KCHNG    DS   1
; INTERRUPT WRITTEN ABOVE
WAITKEY:
WFKEY:
     LD   A,(KHIT)
     XOR  0FFH
     LD   B,A
     JR   NZ,GKEY
     LD   A,(KCHNG)
     AND  A
     JR   Z,WFKEY
  OK GOT A KEY IS IT ACTIVE
     LD   B,A
     SUB  A
     LD   (KCHNG),A

     LD   A,(KEY)
     AND  B
     JR   NZ,WAITKEY      ;NOPE NOT ACTIVE
     LD   A,(KEY)
     XOR  0FFH
     AND  B
SOUT:
     RL   A
     JR   NC,SOUT
     AND  A          ;SHOULD BE ZERO NOW..
     JR   NZ,WAITKEY      ;MORE THAN ONE KEY ERROR

GKEY:
     LD   A,B
     LD   (ACC),A         ;OK SAVE KCHNGE
     SUB  A
     LD   (KCHNG),A
     DEC  A
     LD   (KHIT),A  ;CLEAR KEY

     JP   MAIN
GOTO:
     LD   A,(DE)     ;GET LOW BYTE
     LD   L,A
     INC  DE
     LD   A,(DE)
     LD   H,A
     LD   (POINTER),HL         ;MODIFY POINTER
     JP   MAIN
WAITSEC:

     LD   A,(DE)          ;GET NUMBER OF BYTES
```

```
                    ;INC TO NEXT COMMAND
      INC   DE
      LD    (POINTER),DE
      LD    B,A
WAITS:
; GET NUMBER OF SECONDS TO WAIT FOR
      SUB   A
      LD    (HERTZ),A ;HERTZ COUNTS 1/50 SEC
W50TH:
      LD    A,(KHIT)
      XOR   0FFH
      LD    C,A
      JR    Z,NKHIT
      SUB   A
      LD    (KCHNG),A
      DEC   A
      LD    (KHIT),A

      JP    MAIN
NKHIT:
      LD    A,(KCHNG)
      AND   A
      JR    Z,NGBL

      LD    C,A

      SUB   A
      LD    (KCHNG),A

      LD    A,(KEY)
      AND   C
      JP    Z,MAIN

      SUB   A
      LD    (KCHNG),A ;CLEAR KEY.
NGBL:
      LD    A,(HERTZ)
      CP    50
      JR    C,W50TH

      DEC   B           ;1 SEC
      JR    NZ,WAITS
      JP    MAIN

THENIF:
      LD    A,(ACC)
      LD    B,A
      LD    A,(DE)
      INC   DE          ;POINT TO ADD
      LD    (POINTER),DE
      CP    B
      JR    Z,GOTO
      INC   DE
      INC   DE
      LD    (POINTER),DE
      JP    MAIN

CLRSCREN:
      CALL CLRSCRN
      LD    DE,(POINTER)
```

```
      LD    A,(DE)
      LD    (KMASK),A
      INC   DE
      LD    (POINTER),DE
      LD    (KMASK),A ;MASK OFF KEYS
      JP    MAIN
CALLSUB:
      LD    A,(DE)
      LD    L,A
      INC   DE
      LD    A,(DE)
      LD    H,A
      INC   DE
      LD    (POINTER),DE
      JP    (HL)        ;SAME AS GOTO BUT?? DOESN'T
                        ;CHANGE POINTER
PUTEAM:
; FIRST WHICH WAS SELECTED
NGOTA:
      LD    A,(WLEAGUE)
;*** DATABASE NEED TO CHANGE THIS PROGRAM...POINTER INTO RAM.
      LD    DE,TEAMNAMES    ;POINTER TO CRUNCHED TEXT
      LD    L,A   ;HL COUNT
      LD    H,0
      CALL TXTDCH           ;SEND THAT STUFF OUT
      JP    MAIN


PUTTEAMS:
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
      LD    C,0   ;MAX
; ONLY PUT UP 3 @ ONE TIME
TELOP:
      CALL GETLEND          ;HL POINTS TO END OF LEAGUE

      LD    A,(LEAGUE)
      NEG
      ADD   A,(HL)
      DEC   A
      JR    NZ,NONE    ;NOT ONE.

      CALL DOCR
; CHECK IF THIS IS POINTING TO  6
NONE:
      LD    A,(LEAGUE)
; MASK OFF NAT OR EAST WEST
      CALL  MSKOFF
      AND   07H         ;ASSUMING < 8 TEAMS
      ADD   A,C
      ADD   A,'1'
      RST   OUTCH
      LD    A,'.'
      RST   OUTCH
      LD    A,' '
      RST   OUTCH

      LD    A,(LEAGUE)
      ADD   A,C
      LD    L,A
```

```
      LD   H,0
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
      LD   DE,TEAMNAMES
      PUSH BC
      CALL TXTDCH

      POP  BC

      CALL DOCR        ;DO CARRAIGE RETURN

      INC  C           ;R WE DONE?
      LD   A,3
      CP   C
      JP   Z,BOTLIN    ;DONE BOTTOM LINE

      CALL GETLEND
      LD   A,(LEAGUE)
      ADD  A,C
      SUB  (HL) ;HL POINTS TO START OF NEXT LEAGUE
      JR   NZ,TELOP
BOTLIN:
; IF 3 ENTER NORM
; IF 2 ENTERY SPLIT
; IF 1 ENTERY MIDDLE
      CALL GETLEND          ;GET START OF NEXT LEAGUE

; @ LEAST 1 2 OR 3

      LD   A,(LEAGUE)       ;CURRENT POSITION
      NEG
      ADD  A,(HL)
      DEC  A
      JR   NZ,CTWO
; SPECIAL CASE..

      SUB  A
      LD   (CHOICE),A
      LD   BC,0D07H  ;MIDDLE OF SCREEN
      LD   (CURSOR),BC
      LD   A,(LEAGUE)
      CALL MSKOFF
      ADD  A,'1'
      RST  OUTCH
      JP   MAIN
CTWO:
      DEC  A
      JR   NZ,NSPIC1
      LD   A,1
      LD   (CHOICE),A
; SPLIT SCREEN....
      LD   BC,0007H
      LD   (CURSOR),BC
      LD   A,(LEAGUE)
      CALL MSKOFF
      LD   D,A
      ADD  A,'1'
      RST  OUTCH
      LD   BC,1A07H  ;END OF SCREEN
      LD   (CURSOR),BC
```

```
        LD    A,D
        ADD   A,'2'
        RST   OUTCH
        JP    MAIN

NSPIC1:
        LD    A,2
        LD    (CHOICE),A
        LD    BC,0007H
        LD    (CURSOR),BC
        LD    A,(LEAGUE)
        CALL  MSKOFF
        LD    D,A
        ADD   A,'1'

        RST   OUTCH

        LD    BC,0D07H  ;MIDDLE OF SCREEN
        LD    (CURSOR),BC
        LD    A,D
        ADD   A,'2'
        RST   OUTCH

        LD    BC,1A07H  ;END OF SCREEN
        LD    (CURSOR),BC
        LD    A,D
        ADD   A,'3'
        RST   OUTCH
        JP    MAIN

DOCR:
        SUB   A
        LD    (REVID),A ;CLEAR REVERSE VIDEO MASK
        LD    HL,(CURSOR)
        INC   L
        BIT   3,L
        JR    Z,CLDCR
        LD    L,0               ;ROLLED OVER THE BOTTOM
CLDCR:
        LD    H,0
        LD    (CURSOR),HL
        RET

CARRIAGE:
                  ; B = X CHARACTER POSITION (0-19)
                  ; C = Y LINE NUMBER 0-7
        CALL  DOCR
        JP    MAIN

SETALNL:
        LD    A,(MLLEN+2)     ;SNLE          ;START OF NATIONAL LEAGUE
ALOG:
        LD    (LEAGUE),A
        SUB   A
        LD    (ROSTOFF),A     ;OFFSET INTO ROSTERS
        JP    MAIN
CLRALNL:
        LD    A,(MLLEN) ;SALE      SUB  A
        JR    ALOG
```

```
PUTUPALNL:
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
     LD   HL,TEXTAL
     PUSH HL
     LD   HL,MLLEN+2
     LD   A,(LEAGUE)
     CP   (HL)
     POP  HL          ;SNLE          ;<<
     JR   C,UNAT      ;UP AMERICAN LEAGUE
     LD   HL,TEXTNL
UNAT:
     LD   A,(HL)
     AND  A
     JP   Z,MAIN
     RST  OUTCH
     INC  HL
     JR   UNAT
SETETWT:
     PUSH HL
     LD   HL,MLLEN+2
     LD   A,(LEAGUE)
     CP   (HL) ;SNLE          ;<<
     POP  HL
     JR   C,IAMC
     LD   A,(MLLEN+3)     ;SNLW          ;<<
     JR   ALOG
IAMC:
     LD   A,(MLLEN+1)     ;     LD   A,SALW          ;<<
     JR   ALOG
CLRETWT:
     PUSH HL
     LD   HL,MLLEN+2
     LD   A,(LEAGUE)
     CP   (HL) ;SNLE          ;<<
     POP  HL
     JR   C,IAMC2
     LD   A,(MLLEN+2)     ;SNLE          ;<<
     JR   ALOG
IAMC2:
     LD   A,(MLLEN) ;     SUB  A
     JR   ALOG


PUTUPETWT:
;*** DATABASE NEED TO CHANGE THIS PROGRAM...
     LD   HL,TEXTEAST
     PUSH HL
     LD   HL,MLLEN+2
     LD   A,(LEAGUE)
     CP   (HL) ;SNLE          ;<<
     JR   NC,INATLL
     DEC  HL
     CP   (HL) ;SALW          ;<<
     POP  HL
     JR   C,UNAT
UWST:
     LD   HL,TEXTWEST
     JR   UNAT
INATLL:
     INC  HL
```

```
      CP    (HL) ;SNLW
      POP   HL
      JR    C,UNAT
      JR    UWST
-------------------------------------------------------------------
SMAIN:
      LD    HL,START
      LD    (POINTER),HL
      SUB   A
      LD    (KCHNG),A
      DEC   A
      LD    (KHIT),A  ;CLEAR KEY HIT FLAG FROM OUTCHR
MAIN:
      LD    DE,(POINTER)
      LD    A,(DE)          ;GET CHARACTER
      INC   DE
      LD    (POINTER),DE

      LD    HL,MDLST
      LD    BC,ECMDLST-CMDLST
      CPDR
      JR    Z,GOTS

      RST   OUTCH           ;SEND CHARACTER

      JR    MAIN
GOTS:
; INC POINTER
      LD    A,C
      ADD   A,A         ;MULT BY 2

      LD    HL,COMADD
      RST   CONV        ;GET JUMP TABLE VALUE

      LD    A,(HL)
      INC   HL
      LD    H,(HL)
      LD    L,A

      JP    (HL)        ;GOTO...


CMDLST:
      DB    '@$>+?*'
MDLST:
      DB    CR
ECMDLST:
COMADD:
      DW    GOTO
      DW    WAITSEC
      DW    THENIF
      DW    CLRSCREN
      DW    WAITKEY
      DW    CALLSUB
      DW    CARRIAGE
```

```
;*****************************************************
;*****************************************************
;*****************************************************
MULTPLY:
;*****************************************************
;*****************************************************
;*****************************************************
; 16*16 = 32 BIT RESULT
; HL * BC
; RESULTS => TMP3,2,1,0    +3=MSB,0=LSB
; USES  TMP (0,1,2,3   ,4,5,6,7)
;CLEAR MEMORY
     PUSH HL
; TMP LSB    OR 4
; TMP+1 MID     5
; TMP+2 MSB     6
; CLEAR MEMORY
     LD   HL,0
     LD   (TMP),HL
     LD   (TMP+2),HL
     LD   (TMP+4),HL
     LD   (TMP+6),HL

     POP  HL

     LD   (TMP+4),HL      ;SAVE VALUE

DMLT:
     SRL  B
     RR   C     ;SHIFT RIGHT
     JR   NC,NOADD

     LD   HL,(TMP)
     LD   DE,(TMP+4)
     ADD  HL,DE
     LD   (TMP),HL
     LD   HL,(TMP+2)
     LD   DE,(TMP+6)
     ADC  HL,DE
     LD   (TMP+2),HL
NOADD:
     LD   DE,(TMP+6)
     LD   HL,(TMP+4)
; MULT  * 2
     SLA  L
     RL   H
     RL   E
     RL   D
     LD   (TMP+6),DE
     LD   (TMP+4),HL

     LD   A,B
     OR   C
     JR   NZ,DMLT

     RET
```

```
;*****************************************************
;*****************************************************
;*****************************************************
DIVIDE:
;*****************************************************
;*****************************************************
;*****************************************************
;  VERY DIRTY...

; IY,IX CLEAN
; BC,HL,DE,AF DIRTY
; 32 BIT / 16 BIT
; WHERE 24 BIT = TMP(3,2,1,0) MSB , LSB
; HL = 16 BIT
; MEMORY
; TMP (3,2,1,0) = DIVSOR
; TMP (4,5,6,7) = HL*FACTOR
; TMP (8,9) FACTOR
; TMP (10,11) RESULT
;
;  RETURN ZERO IF ERROR!!!!!
;
     LD   A,L  ;TEST IF DIVIDE BY ZERO...
     OR   H
     RET  Z    ;RETURN IF ZERO

     LD   (TMP+4),HL      ;4,5,6,7

     LD   DE,0
     LD   (TMP+10),DE     ;CLEAR RESULT
     LD   (TMP+6),DE

     INC  DE         ;SET TO 1
     LD   BC,0
;
; MULT BY 24 OR 16 BITS..
;  *16 BITS OR
;
LOOPD:
     SLA  E          ;SHIFT THOSE BABY UP TO MAX.
     RL   D
; IF CARRY IS SET HERE WE MAXED OUT...
     JR   C,ALDN     ;ALL DONE. NOW!!!! MORE THAN 16 SHIFTS..

     ADD  HL,HL
     RL   C
     RL   B

     JP   M,WDNE          ;WE'RE DONE.

     JR   LOOPD

ALDN:
     RR   D          ;DE,8000H
WDNE:
     LD   (TMP+4),HL      ;SAVE RESULTS
     LD   (TMP+6),BC
     LD   (TMP+8),DE      ;SAVE NUMBER
```

```
DLOOP:
     LD   HL,(TMP)   ;IS TMP-(TMP+3*FACTOR)
     LD   DE,(TMP+4)
     AND  A
     SBC  HL,DE           ;< RESULTS

     PUSH HL    ;SAVE RESULTS

     LD   HL,(TMP+2)
     LD   DE,(TMP+6)
     SBC  HL,DE
     JR   C,NSHFT         ; TMP+3*FACTOR IS >

     LD   (TMP+2),HL
     POP  HL
     LD   (TMP),HL

     LD   HL,(TMP+8)      ;GET VALUE

     LD   DE,(TMP+10)
     ADD  HL,DE
      LD   (TMP+10),HL
      JR   NBALN           ;SKP POP
NSHFT:
      POP  HL         ;BALANCE STACK
NBALN:
     LD   HL,(TMP+4)
     LD   DE,(TMP+6)
     SRL  D
     RR   E
     RR   H
     RR   L
     LD   (TMP+6),DE
     LD   (TMP+4),HL
;
     LD   HL,(TMP+8)
     SRL  H
     RR   L
     LD   (TMP+8),HL

     LD   A,L
     OR   H
     JR   NZ,DLOOP

     LD   HL,(TMP+10)
     LD   A,1
     AND  A     ;NZ
     RET




     POOP

;    ORG  4000H
; SUBROUTINES WITH TO SUPPORT TEXT...

; FN3- USED IN SCRN16,INITIALIZES (FLAG)
FN3:
```

```
     LD    A,(ACC)
     CP    FUN3
     JP    NZ,MAIN    ;RETURN
     LD    A,(FLAG)
     RES   SEL,A
     RES   SHOW,A
     LD    (FLAG),A
     LD    HL,SCRN20
     LD    (POINTER),HL
     JP    MAIN



; PUTFACT - PUTS UP FRACTION AS SHOWN BELOW
;   USED TO CALULATION OF ERA,BA,W%
PUTFACT:
; DATA IN HL, PUT UP AS 1.XXX
     SRL   H
     RR    L
     JR    NC,KEEP
; ROUND UP.....
     INC   HL
KEEP:
     LD    B,0         ;WILL NOT DISPLAY ZERO'S.
; RETURNS PERCENT IN HL
KEEPS:
     LD    DE,1000          ;HL CONTAINS NUMBER
                            ;DE / 1000
                            ;RETURNS HL REMAINER B = ASCII
                            ;NUMBER
     CALL BCDCONV

     LD    B,1         ;BIT 0 NON-ZERO WILL DISPLAY ZERO'S

     LD    A,'.'
     RST   OUTCH

     LD    DE,100
     CALL  BCDCONV
     LD    DE,10
     CALL  BCDCONV
     LD    A,L
     ADD   A,'0'
     JP    OUTCH



;**DATABASE WILL CHANGE THIS CODE.
;PUTTSND - PUT UP TEAM STANDINGS.. ASSUMES WE DON'T OVERFLOW
;         TO NEXT SCREEN!!!!!
;FORMAT OF LINE IS AS FOLLOWS
;'CITYSS XX   XX  .XXX   XXX'

PUTTSND:
     CALL  GETLEAL          ;GET LEAGUES LENGTH
     LD    E,(HL)           ;TOTAL NUMBER OF TEAMS IN LEAGUE
     LD    C,0         ;LOOP COUNTER
```

```
     LD   A,(MLLEN+1)     ;SALW          ;<<
     CP   E
     JR   Z,PTSND         ;FULL SCREEN AMERICAN LEAGUE
; E TOTAL NUMBER IN LOOP
     CALL DOCR       ;ALL LINE
; C LOOP COUNTER

PTSND:
     CALL GETLEND         ;POINTS TO END OF LEAGUE
; HL POINTS OF OFFSET BYTE
     DEC  HL         ;OFFSET INTO LEAGUE..
; E CONTAINS NUMBER OF TEAMS
; HL POINTS TO TEAM NUMBER
     LD   A,(HL)     ;OFFSET INTO LEAGUE
; BEGINNING OF LIST
; OFFSET OF LEAGUE
     ADD  A,C        ;GET TEAM IN LIST

     LD   HL,TSTND   ;TEAM STANDINGS
     RST  CONV ;OFFSET INTO TEAM

     LD   A,(HL)     ;GOT TEAM

     LD   D,A        ;SAVE THE MOTHER
; GO THE TEAM NAME...
; MULT BY 3 TO GET NAME
     ADD  A,A
     ADD  A,D        ;MULT BY 3

     LD   HL,LEG          ;3 DIGIT TEXT FOR LEAGUE
     RST  CONV

     LD   B,3   ;THREE CHARACTER
STO:
     LD   A,(HL)
     RST  OUTCH           ;3 CHARACTER TEAM NAME
     INC  HL
     DJNZ STO

     LD   B,2
     CALL SPCS
; GET WIN'S
     LD   A,D

     LD   (TMP),A         ;TEAM NUMBER SAVED IN TMP

     ADD  A,A

     LD   HL,GAMSTND      ;WIN/LOSES
     RST  CONV

     LD   A,(HL)          ;WINS


     CALL DSP100


     LD   B,2
     CALL SPCS
```

```
     INC  HL
     LD   A,(HL)          ;LOSES
     CALL DSP100


     LD   B,2
     CALL SPCS       ;PCT

     PUSH HL         ;POINTING TO LOSES
     PUSH DE
     PUSH BC

     LD   A,(TMP)
     CALL GETPER
     CALL PUTFACT


     POP  BC
     POP  DE
     POP  HL

     LD   B,2
     CALL SPCS


     LD   A,C
     AND  A
     JR   NZ,CALGB

     LD   A,(HL)          ;GET WINS
     LD   (LOSES),A
     DEC  HL
     LD   A,(HL)
     LD   (WINS),A
DASHIT:
     LD   A,' '
     RST  OUTCH

     LD   B,2
WDO:
     LD   A,'-'
     RST  OUTCH
     DJNZ WDO


     JR   EGB
CALGB:
; HL POINTS TO LOSES
     DEC  HL         ;POINT TO WINS

; WINS - OTHERGUYS WINS + OTHERGUYS LOSES - LOSES

     LD   A,(WINS)   ;WINS
     SUB  (HL)       ;- OTHERGUYS LOSES
     INC  HL         ;GOTO LOSES
     ADD  A,(HL)          ;ADD OTHERGUYS LOSES
     LD   B,A        ;SAVE IT
     LD   A,(LOSES)  ;GET LOSES
     NEG             ;COMPLEMENT
     ADD  A,B        ;ADDIT.  SAME AS SUBTRACT LOSES
     JR   Z,DASHIT
```

```
      PUSH AF    ;SAVE IT

      SRL  A           ;DIVIDE BY 2
      CALL DSP100
      POP  AF
      AND  01H         ;CHECK FOR HALF GAME
      JR   Z,EGB
      LD   A,HALFCHAR            ;IT'S HAVE
      RST  OUTCH                 ;1/2 CHARACTER...
      JR   EGBB
EGB:
      CALL DOCR
EGBB:
      INC  C
      LD   A,C
      CP   E
      JP   NZ,PTSND

      LD   HL,WKY19A
      LD   (POINTER),HL
      JP   MAIN
DSP100:

; D,A ,B  DISTORYED

      LD   D,00
DP100:
; D,A,B DISTORYED
      CALL DIV100     ;DIV BY 100 DISPLAY IT
DP10:
      CALL DIV10      ;DIV BY 10 DISPLAY
      ADD  A,'0'
      JP   OUTCH
DSP10:
      LD   D,0
      JR   DP10


SPCS:
      LD   A,' '
      RST  OUTCH
      DJNZ SPCS
      RET

DIV100:
      LD   B,100
      JR   DV1
DIV10:
      LD   B,10
DV1:
      PUSH AF
      LD   A,D
      AND  80H
      OR   '0'
      LD   D,A
      POP  AF
DV2
      SUB  B
```

```
      JR    C,NIN
      SET   7,D  ;SET FLAG TO DISPLAY DATA.
      INC   D
      JR    DV2
NIN:
      ADD   A,B
      PUSH  AF
      LD    A,D
      CP    '0'  ;IS IT ZERO
      JR    Z,OKSPC
      AND   7FH
      RST   OUTCH
      POP   AF
      RET
OKSPC:
      LD    A,' ';
      RST   OUTCH
      POP   AF
      RET
```

```
BITSET     EQU   08H
BITCLR     EQU   00H


;TEST BASED PROCESSOR
;+= END OF TEXT
;   KEY MASK BIT.. IF KEY HIT WHILE WAITING IT'S ABORTED
;
;?= WAIT FOR KEY WITH ACC = DATA
;>xx TEST IF ACC = xx WHERE XX = HEX NUMBER
;@= GOTO NEXT ADDRESS
;  DW ADDRESS
;$= WAIT
; DB XX ; WHERE XX = NUMBER OF SECONDS
;*= GOTO ASSEMBLY CODE POINTED TO BY NEXT TWO BYTES
;  DW XX
START:
      DB    '+'
      DB    0     ;DISABLE ALL KEYS...

      DB    '         WELCOME TO'
      DB    CR

      DB    CR
      DB    '          BASEBALL'
      DB    CR

      DB    CR
      DB    '         STATISTICS'
      DB    CR

      DB    CR

      DB    CR
      DB    '   LAST UPDATE 04/25/89'

      DB    '$'   ;TIME OUT FOR
      DB    1     ;10 SECONDS
```

```
        DB    '+'
        DB    0     ;DISABLE ALL KEYS...

        DB    '       THE SILVER BULLET'
        DB    CR

        DB    CR
        DB    '     WON'
        DB    2CH
        DB    'T SLOW YOU DOWN'
        DB    CR

        DB    CR
        DB    '     COORS LIGHT IS THE'
;       DB    CR
        DB    CR
        DB    '     RIGHT BEER FOR NOW!'
;       DB    CR

;       DB    CR
;       DB    '   LAST UPDATE 04/25/89'

        DB    '$'   ;TIME OUT FOR
        DB    1     ;10 SECONDS


SCRN01:
        DB    '+'
        DB    FUN1+FUN2+FUN3+CURDWN   ;ABLE ONLY THESE KEYS
;       DB    0FFH ;ENABLE ALL KEYS   ;CLEAR SCREEN

        DB    '        PLEASE SELECT      ',CRDWN
;       DB    CR

        DB    CR
        DB    '     1. PLAYER STATS'
        DB    CR
        DB    '     2. INFORMATION'
        DB    CR
        DB    '     3. TEAM STANDINGS'
        DB    CR

        DB    CR

        DB    CR
        DB    '1           2           3'
; WAIT FOR KEY....
WKY01:
        DB    '?'   ;WAIT FOR KEY
; IS IT FUNCTION 1
        DB    '>'
        DB    FUN1 ;THEN GOTO
        DW    SCRN20          ;NEEDS PROCESSING..???
; IS IT FUNCTION 2
        DB    '>'
        DB    FUN2 ;02   ;IF THEN GOTO
        DW    TBD  ;???
; IS IT FUNCTION 3
```

```
      DB    '>'
      DB    FUN3 ;IF THEN GOTO
      DW    SCRN18
; CURSOR DOWN
      DB    '>'
      DB    CURDWN
      DW    SCRN02     ;GOTO SCREEN 2

      DB    '@'  ;GOTO
      DW    WKY01
TBD:
      DB    '+'
      DB    FUN4
      DB    '*'
      DW    INTINFO
INTINFO:
 ; NEED TO REUSED MEMORY ... LISTP ??
; INFORMATION SCREENS...
; PUT NEWS OUT

      LD    A,(MLLEN+2)     ;START OF NL
      LD    B,A
      LD    HL,ALNEWS ;AL NEWS
      LD    A,(LEAGUE)      ;AL OR NL
      CP    B
      JR    C,YESNEW
      LD    HL,NLNEWS ;POINT TO NLNEWS
YESNEW:
;HL IS POINTING TO START OF NEW
; FIRST BYTE IS NUMBER OF PAGES
      LD    A,(HL)
      AND   A
      JR    NZ,NEWTODY      ;YES NEW FOR TODAY
REMAN:
      LD    HL,SCRN01 ;RETURN ADDRESS
      LD    (POINTER),HL
      JP    MAIN
NEWTODY:
      INC   HL
      LD    (TXTPTR),HL     ;SAVE TEXT START POINTER

      LD    (PAGNUM),A      ;NUMBER OF PAGES
      SUB   A
      LD    (CURPAG),A
;
LOPPAG:
;
; PUTS OUT PAGE REQUESTED...
; PAGES ARE SET UP
      CALL CLRSCRN          ;CLEAR SCREEN

      LD    A,(CURPAG)
      LD    C,FUN4
; OK DETERMINE K MASK
      AND   A
      JR    Z,NUP
      LD    C,FUN4+CURUP
NUP:
      INC   A
      LD    B,A
```

```
     LD   A,(PAGNUM)
     CP   1
     JR   Z,THATSIT ;THATS IT
     CP   B
     JR   Z,THATSIT
     LD   A,C
     OR   CURDWN
     LD   C,A
THATSIT:
     LD   A,C
     LD   (KMASK),A

     LD   DE,(TXTPTR)
     LD   A,(CURPAG)
     AND  A
     JR   Z,GOTSCRN
LOOA:
     PUSH AF   ;SAVE A
; GO UNTIL WE SEE A '+'
NOTPLUS:
     SET  1,C
     CALL DELOOP    ;GET CHARACTER
     CP   '+'
     JR   NZ,NOTPLUS     ;GO TO NEXT SCREEN
     POP  AF
     DEC  A
     JR   NZ,LOOA

GOTSCRN:
     SET  1,C
     CALL DELOOP
     CP   '+'
     JR   Z,FINFO   ;FINISHED WITH INFO
     CP   CR
     JR   Z,DCRD
     CP   LF
     JR   Z,GOTSCRN ;NO LF'S
     RST  OUTCH
     JR   GOTSCRN
DCRD:
     CALL DOCR
     JR   GOTSCRN

FINFO:
;
; PUT DATA OUT...
;
;
; OK DETERMINE WHERE THE CURSOR GOES..
     SUB  A
     LD   (CURSOR),A
     LD   A,25
     LD   (CURSOR+1),A
     LD   A,(CURPAG)
     AND  A
     JR   NZ,CHKUPD ;CHECK DOWN OR MAYBE UP/DWN
; COULD BE DWN PUT MUST CHECK CURPAG AGAIN PAGNUM
; SET UP KEY MASK ALSO
     LD   C,CRDWN   ;CURSOR DOWN CHARACTER
```

```
      LD    A,(PAGNUM)
      CP    1
      JR    NZ,YESCUR ;MORE THAN 1 PAGE?
; NO THEN ONLY 1 PAGE.. DONE..
      LD    A,' '     ;ONLY 1 PAGE..
      JR    YESCUR
CHKUPD:
; OBVIOUSLY CAN HAVE UP
      LD    C,CRUP
      LD    B,A  ;CURRENT PAGE
      LD    A,(PAGNUM)
      INC   B
      CP    B
      JR    Z,YESCUR  ;ONLY UP
      LD    C,CRUPDN
YESCUR:

      LD    A,C
      RST   OUTCH
CANGO:
      LD    HL,WNEW
      LD    (POINTER),HL
      JP    MAIN
WNEW:
      DB    '?'  ;WAIT FOR KEY
      DB    '*'
      DW    TWNEW
TWNEW:
; GOT A KEY
      LD    A,(ACC)
      CP    FUN4
      JP    Z,REMAN         ;RETURN
; CHECK CURUP
      CP    CURUP           ;CAN WE GO UP?
      JR    NZ,KNWDWN ;NOT UP
; OK CURSOR UP
      LD    A,(CURPAG)      ;R WE @ 0?
      AND   A
      JR    Z,CANGO         ;CAN'T GO UP
      DEC   A
ECURP:
      LD    (CURPAG),A

      JP    LOPPAG
KNWDWN:
      CP    CURDWN
      JR    NZ,CANGO  ;NOT DWN WAIT FOR NEXT KEY
      LD    A,(PAGNUM)
      LD    B,A       ;TOTAL NUMBER OF PAGES..
      LD    A,(CURPAG)
      INC   A
      CP    B
      JR    NC,CANGO  ;NOPE @ THE END...
      JR    ECURP

SCRN02:
      DB    '+'
      DB    FUN1+FUN2+FUN3+FUN4+CURUP  ;ABLE ONLY THESE KEYS
;     DB    0FFH ;ENABLE ALL KEYS  ;CLEAR SCREEN
```

```
        DB    '        PLEASE SELECT      ',CRUP
;       DB    CR

        DB    CR
        DB    '      4. CATEGORY LEADERS'
        DB    CR
        DB    '      5. UPDATE'
        DB    CR
        DB    '      6. MY TEAM'
        DB    CR

        DB    CR

        DB    CR
        DB    '4            5             6'
WKY02:
        DB    '?'   ;WAIT FOR KEY

        DB    '>'   ;IS IT?
        DB    CURUP      ;CURSOR UP
        DW    SCRN01     ;GO BACK TO SCREEN 1
        DB    '>'
        DB    FUN4
        DW    SCRN01     ;EXTRA RETURN..
        DB    '>'
        DB    FUN1
        DW    SCRN17          ;CATEGORY LEADERS
        DB    '>'
        DB    FUN2
        DW    UPDATE          ;GOTO UPDATE
        DB    '>'   ;IS IT?
        DB    FUN3  ;FUNCTION 2 WHICH IS REALLY 4?
        DW    MYTEAM     ;GOTO TRIVIA???
        DB    '@'   ;GOTO
        DW    WKY02      ;LOOP

SCRN16:
        DB    '+'
        DB    FUN4+FUN1+FUN2+FUN3 ;0FFH      ;ENABLE ALL KEYS
        DB    '       CURRENT SEASON'
        DB    CR

        DB    CR
        DB    '  1. CATAGORY LEADERS'
        DB    CR
        DB    '  2. PLAYERS'
        DB    CR
        DB    '  3. PITCHERS'
        DB    CR

        DB    CR

        DB    CR
        DB    '1            2             3'
```

```
WKY16:
      DB    '?'

      DB    '>'
      DB    FUN4
      DW    SCRN01      ;RETURN TO SCRN 1

      DB    '>'
      DB    FUN1
      DW    SCRN17

      DB    '>'
      DB    FUN2
      DW    SCRN18

      DB    '*'
      DW    FN3         ;GOTO SUBROUTINE FN3

;     DB    '>'
;     DB    FUN3
;     DW    SCRN20

      DB    '@'
      DW    WKY16


SCRN17:
      DB    '+'
      DB    FUN1+FUN3+FUN4 ;0FFH      ;ENABLE ALL KEYS
      DB    '       CATAGORY LEADERS'
      DB    CR

      DB    CR
      DB    '         1. BATTING'
      DB    CR
;     DB    '         2. FIELDING'
      DB    CR
      DB    '         2. PITCHING'
      DB    CR

      DB    CR

      DB    CR
      DB    '1                              2'


WKY17:
      DB    '?'
      DB    '>'
      DB    FUN4
      DW    SCRN02      ;RETURN TO SCRN 1

      DB    '>'
      DB    FUN1
      DW    CATLEDBB

      DB    '>'
      DB    FUN3
      DW    CATLEDPH
      DB    '@'
      DW    WKY17
```

```
SCRN18:
     DB   '+'
     DB   FUN1+FUN3+FUN4 ;0FFH      ;ENABLE ALL KEYS
     DB   '       TEAM STANDINGS'
     DB   CR

     DB   CR

     DB   CR
;    DB   '01234567890123456789012345678'
     DB   '    1.  AMERICAN LEAGUE'
     DB   CR
     DB   '    2.  NATIONAL LEAGUE'
     DB   CR

     DB   CR

     DB   CR
     DB   '1                          2'

WKY18:
     DB   '?'  ;WAIT FOR KEY

     DB   '>'
     DB   FUN4
     DW   SCRN01     ;RETURN BACK .. 1 MEMU

     DB   '>'
     DB   FUN1
     DW   SETAMER    ;RETURN BACK .. 1 MEMU

     DB   '>'
     DB   FUN3
     DW   SETNAT     ;RETURN BACK .. 1 MEMU

     DB   '@'
     DW   WKY18
SETNAT:
     DB   '*'  ;SET BIT
     DW   SETALNL
     DB   '@'
     DW   SCRN18A
SETAMER:
     DB   '*'  ;SET BIT
     DW   CLRALNL
;**************
; WE SELECTED AL/NL NOW CHOOSE WHAT
SCRN18A:
     DB   '+'
     DB   FUN1+FUN3+FUN4 ;0FFH      ;ENABLE ALL KEYS
     DB   '       TEAM STATS'
     DB   CR

     DB   CR
;    DB   '12345678901234567890123456
     DB   '    1. YESTERDAYS GAMES'
     DB   CR
     DB   CR
     DB   '    2. CURRENT STANDINGS'
     DB   CR
```

```
      DB    CR

      DB    CR
      DB    '1                              2'


WKY18A:
      DB    '?'

      DB    '>'
      DB    FUN4
      DW    SCRN18      ;RETURN TO SCRN 1

      DB    '>'
      DB    FUN1
      DW    SCRNYES           ;YESTERDAYS GAMES

      DB    '>'
      DB    FUN3
      DW    SCRN19

      DB    '@'
      DW    WKY18A

; ROUTINES TO SUPPORT YESTERDAYS GAME...

SETUPYES:
; WHERE IS THE DATA LOCATED
      LD    HL,NLRESULT     ;NATIONAL LEAGUE RESULTS
      LD    A,(MLLEN+2)
      LD    B,A
      LD    A,(LEAGUE)
      CP    B
      JR    NC,GOTNALT      ;GOT NATIONAL
      LD    HL,ALRESULT

GOTNALT:
; FIRST BYTE TELLS SYSTEM HOW MANY GAMES..OR RECORDS
      LD    A,(HL)
      LD    (TXTPTR),HL     ;POSITION OF DATA
      LD    (PAGNUM),A      ;TOTAL NUMBER OF PAGES
; IF PAGNUM = 0 THEN RETURN TO MAIN SCREEN
      AND   A
      JR    NZ,SURUP
      LD    HL,SCRN18A
      LD    (POINTER),HL
      JP    MAIN        ;RETURN TO MAIN SCREEN
SURUP:
      LD    C,FUN4+CURDWN
      CP    1           ;MORE THAN 1 PAGE
      JR    NZ,YEPPY    ;YEP
      LD    C,FUN4
YEPPY:
      LD    (KMASK),A ;KEY MASK
      SUB   A
      LD    (CURPAG),A      ;CLEAR CURRENT PAGE..

      CALL CLRSCRN          ;CLEAR SCREEN
```

```
      JP    MAIN

GETDATE:
      LD    HL,(TXTPTR)
      INC   HL
      PUSH  HL
      LD    L,(HL)
; MONTH
      LD    H,0
      CALL  BD10 ; GET MONTHS
      LD    A,'/'
      RST   OUTCH
      POP   HL
      INC   HL
      LD    L,(HL)
      LD    H,0
      CALL  BD10 ;DAY
; OK PUT UP CURSOR

      LD    C,CRUP
      LD    A,(KMASK)
      AND   CURUP
      JR    NZ,YP       ;YES CURSOR UP MAYBE BOTH
; ON CURSOR UP
; MAYBE DOWN
      LD    C,CRDWN
      LD    A,(KMASK)
      AND   CURDWN
      JP    Z,MAIN            ;NOT UP OR DOWN ,, NO CHARACTER NEEDED
SCR:
      LD    A,25
      LD    (CURSOR+1),A
      SUB   A
      LD    (CURSOR),A
      LD    A,C
      RST   OUTCH
      JP    MAIN
YP:
; CHECK FOR DOWN HERE..
      LD    A,(KMASK)
      AND   CURDWN
      JR    Z,SCR
      LD    C,CRUPDN
      JR    SCR
UPAGYES:        ;PUT UP PAGE FOR YESTERDAY.
      LD    A,(PAGNUM)        ;TOTAL NUMBER OF GAMES
      AND   A           ;TEST FOR NO GAMES PLAYED
      JP    Z,MAIN            ;NOTHING TO PUT UP

      LD    HL,(TXTPTR)       ;GET PASSED DATE,NUMBER PAGES
      LD    A,3
      RST   CONV        ;START OF DATA

      LD    A,(CURPAG)        ;GET CURRENT PAGE
      LD    B,A         ;MULT BY 9    SAVE 1
; MULT BY 9
     ADD    A,A   ;*2
     ADD    A,A   ;*4
     ADD    A,A   ;*8
```

```
     ADD  A,B  ;+1 = 9 MULT BY 9
     RST  CONV ;ADD TO HL WHICH IS POINTING TO DATA
; HL POINTING TO DATA...
     PUSH HL   ;SAVE ADDRESS IN IX
     POP  IX   ;SAVE IN IX...
; GET TEAM NAME
; DATABASE ORDER
; WINNING TEAM ID,RUNS,HITS,ERRORS,LOSING TEAM ID,RUNS,HITS,ERR,
; WINNGER PITCHERS ID,LOSING PITCHERS,SAVE
; DATABASE ORDER
;WINNING TEAM,RUN,HITS,ERRORS,LOSING TEAM,RUNS,HITS,ERRORS,WINNING
; PITCHERS,LOSING PITCHER,SAVE PITCHER
;

     LD   A,(IX)
     AND  1FH  ;ONLY TEAM NAME
; MULT BY 3
     LD   B,A  ;SAVE 1 MULT BY 3
     ADD  A,A  ;*2
     ADD  A,B  ;+1 = 3
     LD   HL,LEG    ;TEXT FOR CITYS 3 LETTER
     RST  CONV ;POINT HL TO LETTERS FOR CITY

     LD   B,3  ;3 LETTERS
LCITY:
     LD   A,(HL)    ;GET LETTER OF CITY
     RST  OUTCH     ;OUT CHARACTER
     INC  HL   ;NEXT LETTER
     DJNZ LCITY     ;DEC NUMBER OF LETTERS IF <> 0 THEN GOTO LCITY

;
     LD   B,5  ;PUT OUT 5 SPACES
     CALL SPCS
;
     LD   E,(IX)    ;GET RUNS OF WINNING TEAM
     LD   D,(IX+1)

     LD   B,5       ;SHIFT DE RIGHT 5 TIMES
     CALL DESHFTR        ;TO GET RUNS INTO E
     AND  3FH       ;HITS IS 6 BITS
     LD   L,A       ;BD10 NEEDS DATA IN HL
     LD   H,0
     CALL BD10      ;CONVERT TO BCD OUTPUT TO DISPLAY

     LD   B,5       ;PUT OUT 5 SPACES
     CALL SPCS

     LD   E,(IX+1)  ;GET HITS DATA
     LD   D,(IX+2)
     LD   B,3       ;SHIFT DE DOWN 3
     CALL DESHFTR
     AND  3FH       ;ONLY 6 BITS FOR HITS
     LD   L,A
     LD   H,0
     CALL BD10      ;SEND DATA TWO DIGITS TO DISPLAY

     LD   B,5
     CALL SPCS      ;OUTPUT 5 SPACES
     LD   A,(IX+2)  ;GET ERRORS
```

```
     RRA              ;SHIFT ONLY RIGHT
     AND  0FH         ;MAX ERRORS 15
     LD   L,A
     LD   H,0
     CALL BD10        ;DISPLAY DIGITS

     CALL DOCR        ;DO CARRIAGE RETURN

; NEXT TEAM NAME
     LD   E,(IX+2)    ;GET LOSING TEAMS
     LD   D,(IX+3)
     LD   B,5         ;NEED TO SHIFT DATA 5 TIME TO RIGHT
     CALL DESHFTR

     AND  1FH         ;ONLY 5 BITS
     LD   E,A         ;SAVE DATA
     ADD  A,A         ;*2
     ADD  A,E         ;+1 = 3    <<MULT>>
     LD   HL,LEG           ;GET CITY NAME
     RST  CONV
     LD   B,3         ; PUT OUT ALL THREE CHARACTER
LCO:
     LD   A,(HL)
     RST  OUTCH
     INC  HL
     DJNZ LCO
;
     LD   B,5         ;5 SPACES TO RUN
     CALL SPCS
     LD   A,(IX+3)    ;GET RUNS INFO
     RRA
     RRA
     AND  3FH         ;ONLY 6 BITS
     LD   L,A
     LD   H,0
     CALL BD10        ;OUTPUT 2 DIGITS IN BCD
     LD   B,5
     CALL SPCS        ;OUTPUT 5 SPACES
     LD   A,(IX+4)    ;GET HITS INFO
     AND  3FH
     LD   L,A
     LD   H,0
     CALL BD10
     LD   B,5         ;OUTPUT 5 SPACES
     CALL SPCS
     LD   E,(IX+4)    ;GET ERRORS
     LD   D,(IX+5)
     LD   B,6         ;SHIFT 6 TIMES TO RIGHT
     CALL DESHFTR
     LD   A,E
     AND  0FH         ;MASK OFF ONLY 4 BITS
     LD   L,A
     LD   H,0
     CALL BD10        ;OUTPUT 2 DIGITS.
     CALL DOCR        ;RETURN
; GET PITCHER NAME
     LD   A,'W'
     RST  OUTCH
     LD   A,'P'
```

```
   RST  OUTCH
   LD   B,3
   CALL SPCS
SCRNYES:
     DB   '*'
     DW   SETUPYES  ;SETUP FOR YESTERDAYS RESULTS
;
YESSCRN:
;    DB   '+'
;    DB   CURUP+CURDWN+FUN4   ;0FFH     ;ENABLE ALL KEYS
;    DB   '123456789012345678901234567
     DB   '    RESULTS OF '
     DB   '*'
     DW   GETDATE         ;GET DATE OF RESULTS
     DB   ' '
     DB   '*'
     DW   PUTUPALNL
     DB   CR
     DB   'TEAM      R       H       E'
     DB   CR
     DB   '*'
     DW   UPAGYES         ;PUT UP PAGE FOR YESTERDAY.


     CALL DESHFTR         ;SHIFT DATA 4 TIME RIGHT
     LD   A,D
     AND  01H        ;ONLY 9 BITS
     LD   D,A
     LD   (PLAYER),DE     ;SAVE ID NUMBER
     EX   DE,HL           ;HL CONTAINS PLAYERS NUMBER
;
     LD   DE,(NUMPITS)    ;MAX NUMBER OF PLAYERS..  PITCHERS
     AND  A
     SBC  HL,DE
     JP   NC,MAIN         ;ID IF > MAX PLAYER  HE'S NOT A PLAYER
                     ;RETURN , DON'T DISPLAY ANY THING

     LD   A,'S'
     RST  OUTCH
     LD   A,'P'
     RST  OUTCH
     LD   B,3
     CALL SPCS
     LD   HL,(PLAYER)
     CALL SETNAMS
     LD   A,20
     LD   (CURSOR+1),A    ;NUMBER OF SAVES POSITION
     LD   A,SVDATA
     CALL GETDATA         ;GET DATA...
     CALL BD10
     JP   MAIN       ;GET TO MAIN
DESHFTR:
     SRL  D
     RR   E
     DJNZ DESHFTR
     LD   A,E
     RET
```

```
        LD    E,(IX+5)   ;GET WINNING PITCHER
        LD    D,(IX+6)
        LD    B,2
        CALL DESHFTR          ;SHIFT DATA RIGHT 2 TIMES
        LD    A,D         ; ONLY 9 BITS ALLOWED FOR ID
        AND   01
        LD    D,A
        LD    (PLAYER),DE     ;SAVE PITCHERS ID IN PLAYER
        SUB   A
        LD    (TYPE),A   ;CURRENT SEASON FOR DATABASE ACCESS
        EX    DE,HL           ;HL HAS ID NUMBER
        CALL SETNAMS
; PUT NAME OUT... OK NOW
; OK GET W - LOSES...
        LD    A,20
        LD    (CURSOR+1),A
; GET WINDATA
        LD    A,WINDATA
        CALL GETDATA          ;GET WINS
        CALL BD10
        LD    A,'-'
        RST   OUTCH
        LD    A,LOSDATA
        CALL GETDATA
        CALL BD10
;
        CALL DOCR
        LD    A,'L'
        RST   OUTCH
        LD    A,'P'
        RST   OUTCH

        LD    B,3
        CALL SPCS


        LD    E,(IX+6)   ;LOSING PITCHER
        LD    D,(IX+7)
        LD    B,3        ;SHIFT DATA 3 TIME RIGHT
        CALL DESHFTR
        LD    A,D        ;ID ONLY 9 BITS
        AND   01
        LD    D,A
        LD    (PLAYER),DE     ;SAVE ID NUMBER
        EX    DE,HL           ;HL HAS ID NUMBER
        CALL SETNAMS
; PUTS OUT NAME
        LD    A,20
        LD    (CURSOR+1),A    ;POSITION CURSOR ON COLUMN 20
        LD    A,WINDATA ;GET WIN DATA
        CALL GETDATA
        CALL BD10       ;OUTPUT WIN DATA
        LD    A,'-'           ;
        RST   OUTCH
        LD    A,LOSDATA
        CALL GETDATA
        CALL BD10
;
        CALL DOCR
;
```

```
     LD   E,(IX+7)  ;GET SAVE PITCHERS ID
     LD   D,(IX+8)
     LD   B,4
WYES:
     DB   '?'
     DB   '>'
     DB   FUN4
     DW   SCRN18A
     DB   '*'
     DW   KYES
KYES:
     LD   A,(ACC)
     CP   CURUP
     JR   NZ,YCURUP
; OK CURSOR UP...
     LD   A,(CURPAG)
     AND  A
     JR   Z,SUPKMSK ;SET UP CURSOR MASK , CAN GO UP
     DEC  A
ESUPK:
     LD   (CURPAG),A
SUPKMSK:
     LD   C,FUN4+CURUP
     LD   A,(CURPAG)      ;LOOK @ CURRENT PAGE
     AND  A          ;WE @ PAGE 0
     JR   NZ,CUPOK  ;NO, WE CAN GO UP
; WE ARE @ PAGE ZERO WE CAN'T GO UP
; HOW ABOUT DOWN
     LD   C,FUN4+CURDWN
     LD   A,(PAGNUM)      ;TOTAL NUMBER OF PAGE
     CP   1          ;IS IT > THAN 1?
     JR   NZ,ERUT         ;YES SET KEY MASK TO CURSOR DOWN
; NOPE CAN'T DO DOWN EITHER, JUST RETURN
     LD   C,FUN4
ERUT:
     LD   A,C
     LD   (KMASK),A

     CALL CLRSCRN

     LD   HL,YESSCRN      ;GOTO SCREEN NUMBER
     LD   (POINTER),HL

     JP   MAIN
; OK MORE THAN 1 PAGE SO UP IS OK, CAN WE GO DOWN ALSO?
CUPOK:
     LD   A,(CURPAG)      ;GET CURRENT PAGE
     INC  A
     LD   B,A
     LD   A,(PAGNUM)
     CP   B
     JR   Z,ERUT          ;NOPE ONLY UP
     LD   C,FUN1+CURDWN+CURUP
     JR   ERUT
YCURUP:
; HOW ABOUT CURSOR DOWN?
     CP   CURDWN
     JP   NZ,MAIN         ;WASN'T CURSOR UP EITHER???? SHOULD BE.
     LD   A,(CURPAG)
     INC  A
```

```
      LD    B,A
      LD    A,(PAGNUM)
      CP    B
      JP    Z,SUPKMSK ;CAN'T DO IT JUST DO KEY MASK STUFF
      LD    A,B
      JR    ESUPK
      LD    E,(IX+5)   ;GET WINNING PITCHER
      LD    D,(IX+6)
      LD    B,2
      CALL DESHFTR          ;SHIFT DATA RIGHT 2 TIMES
      LD    A,D         ; ONLY 9 BITS ALLOWED FOR ID
      AND   01
      LD    D,A
      LD    (PLAYER),DE     ;SAVE PITCHERS ID IN PLAYER
      SUB   A
      LD    (TYPE),A   ;CURRENT SEASON FOR DATABASE ACCESS
      EX    DE,HL           ;HL HAS ID NUMBER
      CALL SETNAMS
; PUT NAME OUT... OK NOW
; OK GET W - LOSES...
      LD    A,20
      LD    (CURSOR+1),A
; GET WINDATA
      LD    A,WINDATA
      CALL GETDATA          ;GET WINS
      CALL BD10
      LD    A,'-'
      RST   OUTCH
      LD    A,LOSDATA
      CALL GETDATA
      CALL BD10
;
      CALL DOCR
      LD    A,'L'
      RST   OUTCH
      LD    A,'P'
      RST   OUTCH

      LD    B,3
      CALL SPCS


      LD    E,(IX+6)   ;LOSING PITCHER
      LD    D,(IX+7)
      LD    B,3        ;SHIFT DATA 3 TIME RIGHT
      CALL DESHFTR
      LD    A,D        ;ID ONLY 9 BITS
      AND   01
      LD    D,A
      LD    (PLAYER),DE     ;SAVE ID NUMBER
      EX    DE,HL           ;HL HAS ID NUMBER
      CALL SETNAMS
; PUTS OUT NAME
      LD    A,20
      LD    (CURSOR+1),A    ;POSITION CURSOR ON COLUMN 20
      LD    A,WINDATA ;GET WIN DATA
      CALL GETDATA
      CALL BD10       ;OUTPUT WIN DATA
      LD    A,'-'           ;
```

```
      RST   OUTCH
      LD    A,LOSDATA
      CALL  GETDATA
      CALL  BD10
;
      CALL  DOCR
;
      LD    E,(IX+7)   ;GET SAVE PITCHERS ID
      LD    D,(IX+8)
      LD    B,4
      CALL  DESHFTR          ;SHIFT DATA 4 TIME RIGHT
      LD    A,D
      AND   01H         ;ONLY 9 BITS
      LD    D,A
      LD    (PLAYER),DE      ;SAVE ID NUMBER
      EX    DE,HL            ;HL CONTAINS PLAYERS NUMBER
;
      LD    DE,(NUMPITS)     ;MAX NUMBER OF PLAYERS..  PITCHERS
      AND   A
      SBC   HL,DE
      JP    NC,MAIN          ;ID IF > MAX PLAYER  HE'S NOT A PLAYER
                    ;RETURN , DON'T DISPLAY ANY THING

      LD    A,'S'
      RST   OUTCH
      LD    A,'P'
      RST   OUTCH
      LD    B,3
      CALL  SPCS
      LD    HL,(PLAYER)
      CALL  SETNAMS
      LD    A,20
      LD    (CURSOR+1),A     ;NUMBER OF SAVES POSITION
      LD    A,SVDATA
      CALL  GETDATA          ;GET DATA...
      CALL  BD10
      JP    MAIN       ;GET TO MAIN
DESHFTR:
      SRL   D
      RR    E
      DJNZ  DESHFTR
      LD    A,E
      RET

SCRNYES:
      DB    '*'
      DW    SETUPYES   ;SETUP FOR YESTERDAYS RESULTS
;
YESSCRN:
;     DB    '+'
;     DB    CURUP+CURDWN+FUN4    ;0FFH      ;ENABLE ALL KEYS
;     DB    '12345678901234567890123456
      DB    '    RESULTS OF '
      DB    '*'
      DW    GETDATE          ;GET DATE OF RESULTS
      DB    ' '
      DB    '*'
      DW    PUTUPALNL
```

```
     DB   CR
     DB   'TEAM      R       H       E'
     DB   CR
     DB   '*'
     DW   UPAGYES          ;PUT UP PAGE FOR YESTERDAY.

;*************
SCRN19:
     DB   '+'
     DB   FUN1+FUN3+FUN4 ;0FFH      ;ENABLE ALL KEYS
     DB   '       TEAM STANDINGS     '

     DB   '*'
     DW   PUTUPALNL
;    DB   CR

     DB   CR

     DB   CR
     DB   '         1.  EAST'
     DB   CR
     DB   '         2.  WEST'
     DB   CR

     DB   CR

     DB   CR
     DB   '1                           2'
WKY19:
     DB   '?'  ;WAIT FOR KEY

     DB   '>'
     DB   FUN4
     DW   SCRN18A    ;RETURN BACK .. 1 MEMU

     DB   '>'
     DB   FUN1
     DW   SETEAST    ;RETURN BACK .. 1 MEMU

     DB   '>'
     DB   FUN3
     DW   SETWEST    ;RETURN BACK .. 1 MEMU

     DB   '@'
     DW   WKY19
SETEAST:
     DB   '*'  ;SET BIT
     DW   CLRETWT
     DB   '@'
     DW   SCRN19A
SETWEST:
     DB   '*'  ;SET BIT
     DW   SETETWT

SCRN19A:

; SHOULD HAVE MEMU FOR SELECTING YESTERDAYS GAME..

     DB   '+'
```

```
        DB    FUN4 ;0FFH      ;ENABLE ALL KEYS
        DB    'TEAM    W     L     PCT    GB'
        DB    CR
        DB    '*'
        DW    PUTTSND         ;PUT UP TEAM IN STANDING ORDER
;       DB    'CITYSS XX    XX   .XXX   XXXX'
;       DB    CR
;       DB    'CITYSS XX    XX   .XXX   XXXX'
;       DB    CR
;       DB    'CITYSS XX    XX   .XXX   XXXX'
;       DB    CR
;       DB    'CITYSS XX    XX   .XXX   XXXX'
;       DB    CR
;       DB    'CITYSS XX    XX   .XXX   XXXX'
;       DB    CR
;       DB    'CITYSS XX    XX   .XXX   XXXX'
;       DB    CR
;       DB    'CITYSS XX    XX   .XXX   XXXX'

WKY19A:
        DB    '?'

        DB    '>'
        DB    FUN4
        DW    SCRN19     ;SCREEN 18

        DB    '@'
        DW    WKY19A


SCRN20:
        DB    '+'
        DB    FUN1+FUN3+FUN4 ;0FFH      ;ENABLE ALL KEYS
        DB    '       TEAM ROSTERS'
        DB    CR

        DB    CR

        DB    CR
        DB    '   1.  AMERICAN LEAGUE'
        DB    CR
        DB    '   2.  NATIONAL LEAGUE'
        DB    CR

        DB    CR

        DB    CR
        DB    '1                          2'
WKY20:
        DB    '?'


        DB    '>'
        DB    FUN1
        DW    STAL

        DB    '>'
        DB    FUN3
        DW    STNL
```

```
      DB    '>'
      DB    FUN4
      DW    ESCAP

      DB    '@'
      DW    WKY20
ESCAP:
      DB    '*'
      DW    RESUB

RESUB:
      LD    HL,MYTEAM
      LD    A,(FLAG)
      BIT   SEL,A
      JR    NZ,RESEL
      LD    HL,SCRN16
RESEL:
      LD    (POINTER),HL
      JP    MAIN

STNL:
      DB    '*'  ;SET BIT
      DW    SETALNL
      DB    '@'
      DW    SCRN20A
STAL:
      DB    '*'  ;SET BIT
      DW    CLRALNL
SCRN20A:
      DB    '+'
      DB    FUN1+FUN3+FUN4 ;0FFH      ;ENABLE ALL KEYS
      DB    '       TEAM ROSTERS       '
      DB    '*'
      DW    PUTUPALNL ;PUT UP THE LEAGUE
;     DB    CR

      DB    CR

      DB    CR
      DB    '        1.  EAST'
      DB    CR
      DB    '        2.  WEST'
      DB    CR

      DB    CR

      DB    CR
      DB    '1                              2'
;     DB    '12345678901234567890123456
WKY20A:
      DB    '?'

      DB    '>'
      DB    FUN4
      DW    SCRN20

      DB    '>'
      DB    FUN1
      DW    STEAST
```

```
        DB      '>'
        DB      FUN3
        DW      STWEST

        DB      '@'
        DW      WKY20A

STWEST:
        DB      '*'   ;SET BIT
        DW      SETETWT
        DB      '@'
        DW      SCRN21
STEAST:
        DB      '*'   ;SET BIT
        DW      CLRETWT
SCRN21:
        DB      '+'
        DB      FUN1+FUN2+FUN3+FUN4+CURDWN+CURUP    ;0FFH       ;ENABLE ALL
KEYS
USCRN21:
        DB      'TEAMS                  '
        DB      '*'
        DW      PUTUPALNL
        DB      ' '

        DB      '*'
        DW      PUTUPETWT
CTN21:
        DB      CR

        DB      CR
        DB      '*'
        DW      PUTTEAMS


;       DB      '       1. XXXXXXXXX'
;       DB      CR
;       DB      '       2. XXXXXXXXX'
;       DB      CR
;       DB      '       3. XXXXXXXXX'
;       DB      CR
;       DB      '     '
;       DB      CR
;       DB      CR
;       DB      '1             2             3'

WKY21:
        DB      '?'

;       DB      '>'
;       DB      FUN1
;       DW      SCRN22
;       DB      '>'
;       DB      FUN2
;       DW      SCRN22
;       DB      '>'
;       DB      FUN3
;       DW      SCRN22
```

```
     DB   '*'        ;WE KNOW IT'S
                     ;EITHER UP/DOWN
     DW   CKCUR  ; AND ESCAPE
; AND FUNCTION KEYS
; CHECKS CURSOR POSITION...
CKCUR:

     LD   A,(ACC)
     CP   FUN4       ;ESCAPE?
     JR   Z,RETAN
     CP   CURUP           ;IS IT CURSOR UP?
     JR   Z,SCRTUP   ;YES GO.
     CP   CURDWN
     JR   Z,SCRTDWN
; MUST BE FUN1,2,OR 3
; GET WEIGHTED VALUE.. BY CHOICE
     CALL CHOOSE          ;WEIGHTS VALUE OF FUN1,2,3
     JR   NZ,SCRTDWN
; CHOICE SHOULD BE 0,1,2...
     LD   B,A
     LD   A,(LEAGUE)
     ADD  A,B
     LD   (WLEAGUE),A
     LD   HL,SCRN22
     LD   (POINTER),HL
     JP   MAIN



; MUST BE CURSOR DOWN...
SCRTDWN:
     CALL GETLEND   ;GET START OF NEXT LEAGUE LEAGUES LENGTH  HL
POINTS TO
     LD   A,(LEAGUE)
     ADD  A,3
     CP   (HL)       ;CHECK UPPER LIMIT?
     JR   C,YGOT          ;< UPPER LIMIT.
NOTHN:
     LD   HL,WKY21        ;NEXT CHARACTER
EXPR:
     LD   (POINTER),HL
     JP   MAIN
RETAN
     LD   HL,MYTEAM
     LD   A,(FLAG)
     BIT  SHOW,A
     JR   NZ,EXPR
     LD   HL,SCRN20A
     JR   EXPR
YGOT:
     LD   (LEAGUE),A
; NEED TO REDRAW STUFF.
     LD   HL,SCRN21
     LD   (POINTER),HL
     JP   MAIN
SCRTUP:
     CALL GETLEND
     DEC  HL         ;START OF SECTION
```

```
     LD   A,(LEAGUE)
     SUB  03H  ;SUBTRACT 3??
     JR   C,NOTHN    ;NOPE ROLL OVER....
     CP   (HL) ;SEE IF AT START
     JR   NC,YGOT    ;YEP OK

     JR   NOTHN
SCRN22:
; OK WHICH ONE WAS PUSHED.
     DB   '+'
     DB   FUN1+FUN2+FUN3+FUN4+CURDWN+CURUP    ;0FFH      ;ENABLE ALL
KEYS

     DB   '*'
     DW   PUTEAM

;    DB   'TEAMNAME'
     DB   CR

     DB   CR
;    DB   '12345678901234567890123456

     DB   '*'
     DW   UPLAY1

;    DB   '1. PLAYERS ,NAMEXX NU  POS'
;    DB   CR
;    DB   '2. LAST NAM,FIRST  MB  ITI'
;    DB   CR
;    DB   '3. E FIST  ,NAME L ER  ON '
;    DB   CR
WKY22:
     DB   '?'


     DB   '*'
     DW   WK22S      ;DO KEY DECODE

     DB   '@'
     DW   WKY22

; DO KEYS FOR
TWHR:
     SUB  A
     LD   (ROSTOFF),A     ;TOP OF STACK

     LD   HL,SCRN21
     LD   A,(FLAG)
     BIT  SHOW,A
     JP   Z,RESEL    ;SETS SCREN NUMBER
     LD   HL,MYTEAM
     JP   RESEL
```

```
CHOOSE:
      LD    A,(CHOICE)
      LD    B,A
      LD    C,0
      LD    A,(ACC)
      CP    FUN1
      JR    Z,FUNN
      INC   C
      CP    FUN2
      JR    Z,FUNN
      INC   C
      CP    FUN3
      RET   NZ          ;NONE OF THE ABOVE RETURN.
FUNN:
      LD    A,B         ;0,1,2
      ADD   A,A         ;0,2,4
      ADD   A,B         ;0,3,6 ??
      ADD   A,C         ;+0,1,2
      LD    HL,TCHOIC
      RST   CONV

      LD    A,(HL)      ;GET ADD VALUE TO (ROSTOFF)
CP    (HL)
RET         ;SET ZERO FLAG

WK22S:
      LD    A,(ROSTOFF)
      LD    D,A
      LD    A,(CHOICE)      ;0,1,2
      LD    B,A         ;CHOICE VALUE IN B
      LD    C,0
      LD    A,(ACC)
      CP    CURUP
      JP    Z,HR2       ;DEC ROSTER OFFSET
      CP    CURDWN
      JP    Z,HR1       ;INC ROSTER OFFSET
      CP    FUN4 ;RETURN??
      JR    Z,TWHR      ;ESCAP

      CALL CHOOSE
      JP    NZ,MAIN
; WEIGHTED RESULT 0-2


      ADD   A,D         ;+ OFFSET OF ROSTER
; OK LET'S GO GET PLAYERS NUMBER
      ADD   A,A  ;*2 FOR NUMBER OF BYTES
      PUSH AF
      CALL GETROFF
      POP   AF
      RST   CONV
      LD    A,(HL)
      INC   HL
      LD    H,(HL)
      LD    L,A
      LD    (PLAYER),HL     ;POINT TO PLAYER NUMBER..
; OK DETERMINE IF SELECTING OF WHAT
      LD    A,(FLAG)
      BIT   SEL,A
```

```
;     LD    (TMLEG+TLEG),A        ;REMOVE A GUY..

      PUSH IX
      POP  HL    ; LOCATION TO FILL TO
      PUSH HL
      POP  DE
      INC  HL
      INC  HL
; HL POINTS TO FILL FROM.
; B CONTAIN NUMBERPLAY TOTAL - T HIM
      DEC  B
      JP   Z,REDRAW
      LD   A,B
      ADD  A,A
      LD   C,A
      LD   B,0
      LDIR
      JP   REDRAW

; MOVE FROM HL -> DE FOR BC # BYTES
ISHE:
      LD   A,(WLEAGUE)
      PUSH AF
      LD   A,(MLLEN+NUMDIV)     ;TLEG
      LD   (WLEAGUE),A
      CALL GETROFF          ;GET START OF ROSTER.
      LD   (TMP),HL  ;SAVE START OF ROSTER
      POP  AF
      LD   (WLEAGUE),A

      LD   DE,TMLEG

      LD   A,(MLLEN+NUMDIV)     ;MAX NUMBER OF TEAMS
      ADD  A,E
      JR   NC,NIDD
      INC  D
NIDD:
      LD   E,A
      LD   A,(DE)           ;GET ROSTER LENGTH

;     LD   A,(TMLEG+TLEG) ;NUMBER OF PLAYER ON MY TEAM

      LD   B,A        ;TOTAL NUMBER OF PLAYERS

      LD   DE,(PLAYER)     ;GOT PLAYERS NAME
      PUSH HL
      POP  IX         ;IX POINTS TO START OF ROSTER.

      LD   A,B
      AND  A
      JR   Z,OBODY          ;FIRST PLAYER MUST ADD

; START SEARCH
LOOKING:
      LD   L,(IX)
      LD   H,(IX+1)
      AND  A
      SBC  HL,DE
      JR   Z,FHIM     ;FOUND HIM
      INC  IX
```

```
     INC  IX
     DJNZ LOOKING
OBODY:
     SUB  A
     RET
FHIM
     LD   A,0FFH
     AND  A
     RET
 MTU:
      DB   '*'
      DW   HR2        ;CALL SUBROUTINE

 MTD:
      DB   '*'
      DW   HR1
HR1:
     LD   A,(ROSTOFF)
     ADD  A,3        ;CAN WE GET THREE?
     LD   B,A

     LD   A,(WLEAGUE)
     LD   HL,TMLEG
     RST  CONV
     LD   A,B  ;GET CURRENT LEN
     SUB  (HL) ;MAX LENGTH
     JR   NC,NOMORE ;POSITIVE RESULT THAN NO MORE PLAYERS
     LD   A,B
DIT:
     LD   (ROSTOFF),A
NOMORE:
     LD   HL,SCRN22       ;GOTO ...
     LD   (POINTER),HL
     JP   MAIN
HR2:
     LD   A,(ROSTOFF)
     AND  A
     JR   Z,NOMORE        ;@ START OF ROSTER.
     SUB  3
     JR   DIT
UPLAY1:
     LD   C,0
     LD   A,(ROSTOFF)
     LD   D,A
     LD   B,3

     LD   A,(WLEAGUE)
     LD   HL,TMLEG
     RST  CONV
     LD   A,(HL)          ;NUMBER OF PLAYERS IN LIST
     AND  A          ;IF ZERO THAN NOTHING
     JP   Z,MAIN     ;NO PLAYER ON THIS TEAM...
     SUB  D
     SUB  3          ;CAN WE DISPLAY 3
     JR   NC,SPLYR
     ADD  A,3
     LD   B,A        ;< 3
 ; COMPLEMENT OF IT.
 SPLYR:
     LD   A,B
```

```
     DEC  A
     LD   (CHOICE),A     ;CHOICE OF 3 TYPE DISPLAY FORMATS
NPLYR:


     LD   A,B
     CP   1          ;IF ONE THAN INSET CR
     JR   NZ,NTLNE

     CALL DOCR       ;TWO LINES
     CALL DOCR
NTLNE:
; WHAT IS PLAYER. IS HE ON MY TEAM?


; GOT THE LENGTH NOW, ADD UP ALL LENGTHS TO SEE
; WHERE DATA STARTS
; USING WLEAGUE AS TEAM NUMBER
; EXITS WITH
     PUSH BC

     CALL GETROFF    ;RETURN WITH

     POP  BC

     LD   A,(ROSTOFF)
     ADD  A,C
     ADD  A,A
     RST  CONV       ;GET NEW PLAYER
     LD   A,(HL)
     INC  HL
     LD   H,(HL)
     LD   L,A
     LD   (PLAYER),HL          ;SAVE PLAYERS NAME
; CHECK MY TEAM TO SEE IF HE'S ON MINE!
     PUSH BC         ;SAVE BC
     CALL ISHE       ;IS HE?
     POP  BC
     LD   (REVID),A ;IF FOUND HE A = FF

     LD   A,(ROSTOFF)
     ADD  A,C
     INC  A     ;1 MORE ZERO IS NOT NICE
     PUSH BC
     CALL DSP10
     LD   A,'.'
     RST  OUTCH
     LD   A,' '
     RST  OUTCH

     POP  BC
     PUSH BC
; OK GOT NAME??


     LD   HL,(PLAYER)     ;GET PLAYER NUMBER
     CALL SETNAMS
```

```
      LD    (TMP),DE   ;END OF SPOOL

      POP   BC
      PUSH  BC

      LD    A,(WLEAGUE)
; MULTPLY BY 3
      LD    B,A
      ADD   A,A
      ADD   A,B
      ADD   A,C
      CALL  DSP100
      LD    B,2
      CALL  SPCS
      LD    DE,(TMP)
      LD    A,(DE)
      AND   0FH
      ADD   A,A
      LD    HL,POSNUM
      RST   CONV
      LD    A,(HL)
      RST   OUTCH
      INC   HL
      LD    A,(HL)
      RST   OUTCH
      CALL  DOCR
      POP   BC          ;RESTORE C
      INC   C
; IF B = 2 AND C = 2 THEN ADD CR
      LD    A,B
      CP    2
      JR    NZ,NTWO

      LD    A,C
      CP    1           ;JUST PRINTER FIRST LINE

      CALL  Z,DOCR      ;ADD EXTRA IF ONLY 2 ON SCREEN
NTWO:
      LD    A,B         ;NUMBER OF THINGS TO PUT UP
      CP    C
      JP    NZ,NPLYR

;PROCESS BOTTOM LINE
; B CONTAINS LIMITS + 1
      LD    C,0         ;0-2
NVA:

; SET CURSOR UP FOR CHOICES
      LD    D,B
      DEC   D

      LD    A,D

      ADD   A,A
      ADD   A,D         ;MULT BY 3

      ADD   A,C  ;+ OFFSET
      ADD   A,A  ;GET CURSOR ADDRESS
```

```
     LD   HL,TNUMB
     RST  CONV
     LD   A,(HL)
     INC  HL
     LD   H,(HL)
     LD   L,A
;
     LD   (CURSOR),HL     ;SAVE CURSOR POSITION

     PUSH BC

     LD   A,(ROSTOFF)
     ADD  A,C
     INC  A
     CALL DSP10

     POP  BC

     INC  C
     LD   A,C
     CP   B
     JR   C,NVA

     JP   MAIN
; NUMBER POSITION ADDRESS FOR CURSOR..
; THREE DIFFERENT FORMAT
;
;       1
; 1           2
; 1     2     3

TNUMB:
     DW   0D07H
     DW   0D07H
     DW   0D07H

     DW   0007H
     DW   1807H
     DW   1807H

     DW   0007H
     DW   0D07H
     DW   1807H

; USED WITH CHOICE TO
TCHOIC:
     DB   00    ;FUNCTION #1
     DB   00    ;FUNCTION #2
     DB   00    ;FUNCTION #3

     DB   00    ;FUNCTION #1
     DB   01    ;FUNCTION #2
     DB   01    ;FUNCTION #3

     DB   00    ;FUNCTION #1
     DB   01    ;FUNCTION #2
     DB   02    ;FUNCTION #3
PPNAM:
     CALL HEADER     ;PLAYERS NAME & CITY
```

```
      JP    MAIN

SCRN23:
      DB    '+'
      DB    FUN4+FUN1+FUN2+FUN3+CURLFT+CURRGHT ;0FFH      ;ENABLE ALL
KEYS
;     DB    '12345678901234567890123456
      DB    '*'
      DW    PPNAM

;     DB    'X.LAST NAME              POS'
;     DB    CR
;     DB    'CITY,TEAMNAME             ##'
;     DB    CR
      DB    '  AB       BA       BB     SO'
      DB    '*'
      DW    PUTAB
;     DB    CR
;     DB    '####      .###    ####   ####'
;     DB    CR
      DB    '    H        2B       3B     HR'
;     DB    CR
      DB    '*'
      DW    PUTH
;     DB    '####      ####    ####   ####'
;     DB    CR

      DB    CR
      DB    '1989        TREND       LIFE'
WKY23:
      DB    '?'
      DB    '>'
      DB    FUN4
      DW    SCRN22

      DB    '*'
      DW    SETTYPE
      DB    '>'
      DB    FUN1
      DW    SCRN23

      DB    '>'
      DB    FUN2
      DW    TREND

      DB    '>'
      DB    FUN3
      DW    SCRN23

      DB    '>'
      DB    CURRGHT
      DW    SCRN25

      DB    '>'
      DB    CURLFT
      DW    SCRN24

      DB    '@'
      DW    WKY23
```

```
SCRN23A:
     DB   '+'
     DB   FUN4+FUN1+FUN2+FUN3+CURLFT+CURRGHT ;0FFH      ;ENABLE ALL
KEYS
;    DB   '12345678901234567890123456
     DB   '*'
     DW   PPNAM

;    DB   'X.LAST NAME              POS'
;    DB   CR
;    DB   'CITY,TEAMNAME             ##'
;    DB   CR
;    DB   '12345678901234567890123456
     DB   '  IP     HA      K      WA'
     DB   '*'
     DW   PUTIP
;    DB   CR
;    DB   '####123####123####1234####'
;    DB   CR
     DB   '   G     W     L       ERA'
;    DB   CR
     DB   '*'
     DW   PUTGWL
;    DB   '####123###123###1234#.####'
;    DB   CR

     DB   CR
     DB   '1989       TREND      LIFE'
WKY23A
     DB   '?'

     DB   '>'
     DB   FUN4
     DW   SCRN22

     DB   '*'
     DW   SETTYPE

     DB   '>'
     DB   FUN1
     DW   SCRN23A

     DB   '>'
     DB   FUN2
     DW   TRENDP

     DB   '>'
     DB   FUN3
     DW   SCRN23A

     DB   '>'
     DB   CURRGHT
     DW   SCRN25A

     DB   '>'
     DB   CURLFT
     DW   SCRN24A

     DB   '@'
     DW   WKY23A
```

```
SETTYPE:
     LD   A,(ACC)
     CP   FUN1
     JR   Z,CLRTYPE
     CP   FUN2
     JR   Z,TWOTYPE
     CP   FUN3
     JP   NZ,MAIN
     LD   A,1
ETYPE:
     LD   B,A
     LD   A,(TYPE)
     CP   B
     JR   Z,CLRACC  ;CLEAR ACC
     LD   A,B
     LD   (TYPE),A  ;LIFETIME STAT'S
     JP   MAIN
CLRACC:
     SUB  A         ;ALREADY IN THAT MODE.
     LD   (ACC),A        ;CLEAR KEY
     JP   MAIN
TWOTYPE:
     LD   A,2       ;TREND INFORMATION
     JR   ETYPE
CLRTYPE:
     SUB  A
     JR   ETYPE          ;CLEAR TO CURRENT SEASON STAT
;    DB   '  IP      HA      K      WA'
;    DB   '#####12####123####1234####'
PUTIP:
     LD   A,IPDATA
     CALL GETDATA
     PUSH HL        ;SAVE 3*IPDATE
     LD   (TMP),HL
     LD   HL,0
     LD   (TMP+2),HL
     LD   HL,3
     CALL DIVIDE
     PUSH HL        ;SAVE HL INT(IPDATE/3)
     CALL BD1000
; OK LETS DO THE .1 IR .2 OF
     LD   C,' '          ;SPACE
     LD   A,(TMP)        ;GET FACTIONAL
     AND  A
     JR   Z,PAC
     ADD  A,IPP-1
     LD   C,A
PAC:
     LD   A,C
     RST  OUTCH          ;PUT OUT FACTIONAL PART OF IP

     LD   B,2
     CALL SPCS
     LD   A,HADATA
     CALL GETDATA
     CALL BD1000
     LD   B,3
     CALL SPCS
     LD   A,KDATA
```

```
      CALL GETDATA
      CALL BD1000
      LD   B,4
      CALL SPCS
      LD   A,WADATA
      CALL GETDATA
      CALL BD1000
      JP   MAIN

;     DB   '   G     W     L       ERA'
;     DB   '####123###123###12345#.###'
PUTGWL
      LD   A,GDATA
      CALL GETDATA
      CALL BD1000
      LD   B,3
      CALL SPCS
      LD   A,WINDATA
      CALL GETDATA
      CALL BD100
      LD   B,3
      CALL SPCS
      LD   A,LOSDATA
      CALL GETDATA
      CALL BD100
      LD   B,5
      CALL SPCS
      CALL CALERA
      JP   MAIN

; CALULATE ERA
; #.###
; OR ##.##
CALERA:

; ERA CALULATION
      LD   A,ERDATA
      CALL GETDATA
      PUSH HL
      LD   A,IPDATA
      CALL GETDATA
      POP  DE          ;GET ER DATA
      PUSH HL          ;SAVE IP*3
      EX   DE,HL            ;HL NOW HAS ER
      LD   BC,2000*3*9      ;* 6000
      CALL MULTPLY
      POP  HL          ;DIVIDE BY IP*3
      CALL DIVIDE
;
;9.999
      PUSH HL
      LD   DE,20000
      AND  A
      SBC  HL,DE
      POP  HL
      JR   C,PLT
; DATA IN HL, PUT UP AS 1.XXX
      SRL  H
      RR   L
```

```
     JR    NC,RNDUP
; ROUND UP.....
     INC   HL
RNDUP:
     LD    DE,10000
     LD    B,1
     CALL  BCDCONV
     LD    DE,1000
     CALL  BCDCONV
     LD    A,'.'
     RST   OUTCH
     LD    DE,100
     CALL  BCDCONV
     LD    DE,10
     CALL  BCDCONV
     RET

     JP    MAIN
PLT:
     CALL  PUTFACT
     RET

     JP    MAIN



SCRN24A:
     DB    '+'
     DB    FUN4+FUN1+FUN2+FUN3+CURRGHT    ;0FFH      ;ENABLE ALL KEYS
;    DB    '12345678901234567890123456
     DB    '*'
     DW    PPNAM

;    DB    'X.LAST NAME              POS'
;    DB    CR
;    DB    'CITY,TEAMNAME           ##'
;    DB    CR
     DB    '  ID                H       BA'
;    DB    '####1234567890####123#.###'
;    DB    CR

     DB    '*'
     DW    PUTHBA

     DB    '                      SO      BB'
;    DB    '                     ####    ####'
     DB    '*'
     DW    PUTSO


     DB    CR
     DB    '1989        TREND       LIFE'
WKY24A:
     DB    '?'

     DB    '>'
     DB    FUN4
     DW    SCRN22
```

```
      DB    '*'
      DW    SETTYPE


      DB    '>'
      DB    CURRGHT
      DW    SCRN23A



      DB    '>'
      DB    FUN1
      DW    SCRN24A

      DB    '>'
      DB    FUN2
      DW    TRENDP

      DB    '>'
      DB    FUN3
      DW    SCRN24A

      DB    '@'
      DW    WKY24A



;     DB    '  ID                H       BA'
;     DB    '####1234567890####123#.###'
;     DB    CR
PUTHBA:
      LD    HL,(PLAYER)
      CALL  BD1000
      LD    B,10
      CALL  SPCS
      LD    A,HDATA
      CALL  GETDATA
      PUSH  HL          ;SAVE HITS
      CALL  BD1000
      LD    B,3
      CALL  SPCS

      LD    A,ABDATA
      CALL  GETDATA

      POP   DE          ;RESTORE HITS
      PUSH  HL          ;SAVE @BATS
      EX    DE,HL            ;HL CONTAINS HITS

      LD    BC,2000          ;* 2000
      CALL  MULTPLY
      POP   HL          ;DIVIDE BY AB
      CALL  DIVIDE
      CALL  PUTFACT
      JP    MAIN
;     DB    '                    SO     BB'
;           '0123456789012345
;     DB    '0                ####123####'
```

```
PUTSO:
      LD    A,15
      LD    (CURSOR+1),A    ;SET CURSOR POSITION
      LD    A,SODATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,3
      CALL  SPCS
      LD    A,BBDATA
      CALL  GETDATA
      CALL  BD1000
      JP    MAIN
SCRN25A:
      DB    '+'
      DB    FUN4+FUN1+FUN2+FUN3+CURLFT     ;0FFH      ;ENABLE ALL KEYS
;     DB    '12345678901234567890123456
      DB    '*'
      DW    PPNAM

;     DB    'X.LAST NAME              POS'
;     DB    CR
;     DB    'CITY,TEAMNAME           ##'
;     DB    CR
      DB    '  GS     SHO     SV'
;     DB    '####1234###123###1234#.###
      DB    CR
      DB    '*'
      DW    PUTGS
      DB    CR
      DB    '  CG      W%'
      DB    CR
;     DB    '1###12#.###
      DB    '*'
      DW    PUTCG
      DB    CR

      DB    CR
      DB    '1989        TREND       LIFE'
WKY25A:
      DB    '?'

      DB    '>'
      DB    FUN4
      DW    SCRN22
      DB    '*'
      DW    SETTYPE


      DB    '>'
      DB    CURLFT
      DW    SCRN23A



      DB    '>'
      DB    FUN1
      DW    SCRN25A

      DB    '>'
      DB    FUN2
      DW    TRENDP
```

```
      DB    '>'
      DB    FUN3
      DW    SCRN25A

      DB    '@'
      DW    WKY25A


;     DB    '  GS     SHO     SV'
;     DB    '####1234###123###1234#.###
PUTGS:
      LD    A,GSDATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,4
      CALL  SPCS
      LD    A,SHODATA
      CALL  GETDATA
      CALL  BD100
      LD    B,3
      CALL  SPCS
      LD    A,SVDATA
      CALL  GETDATA
      CALL  BD100
      JP    MAIN
;     DB    '  CG      W%'
;     DB    '1###12#.###
PUTCG:
      LD    A,' '
      RST   OUTCH
      LD    A,CGDATA
      CALL  GETDATA
      CALL  BD100
      LD    A,' '
      RST   OUTCH
      RST   OUTCH
      LD    A,WINDATA
      CALL  GETDATA
      PUSH  HL          ;SAVE IT
      LD    A,LOSDATA
      CALL  GETDATA
      POP   DE          ;GET WINS
      ADD   HL,DE
      PUSH  HL          ;WIN+LOSES
      EX    DE,HL
      LD    BC,2000
      CALL  MULTPLY
      POP   HL
      CALL  DIVIDE            ;RESULT IN HL
      CALL  PUTFACT
      JP    MAIN


;     DB    '  AB       AVR      BB     SO'
;     DB    '#####    #.###    ####   ####
;     DB    '*'
```

```
BD10000:
     LD   DE,10000
     LD   B,0        ;SPACES IN FRONT
     LD   DE,10000
     CALL BCDCONV
I1000:
     LD   DE,1000
     CALL BCDCONV
I100:
     LD   DE,100
     CALL BCDCONV
I10:
     LD   DE,10
     CALL BCDCONV
     LD   A,L
     ADD  A,30H
     JP   OUTCH
BD1000:
     LD   B,0
     JR   I1000
BD100:
     LD   B,0
     JR   I100
BD10:
     LD   B,0
     JR   I10

PUTAB:
     LD   A,ABDATA  ;NEED @ BATS
     CALL GETDATA
     PUSH HL        ;SAVE AB FOR CALULATION OF AVR
; RETURNS IN HL
     CALL BD10000
; CALULATE BATTING AVERAGE...
     LD   B,3
     CALL SPCS
     LD   A,HDATA
     CALL GETDATA
     LD   BC,2000        ;MULT BY 2000
     CALL MULTPLY
     POP  HL        ;GET @ AB
     CALL DIVIDE
; RETURNS IN HL
     CALL PUTFACT        ;PUT UP FACTION FOR BA
     LD   B,3
     CALL SPCS
     LD   A,BBDATA
     CALL GETDATA
     CALL BD1000
     LD   A,' '
     RST  OUTCH
     RST  OUTCH
     LD   A,SODATA
     CALL GETDATA
     CALL BD1000
     JP   MAIN
PUTH:
;    DB   '123456789012345678901234567890'
;    DB   '   H        2B      3B     HR'
;    DB   '####123456###1234###123###'
```

```
      LD    A,HDATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,6
      CALL  SPCS
      LD    A,B2DATA
      CALL  GETDATA
      CALL  BD100
      LD    B,4
      CALL  SPCS
      LD    A,B3DATA
      CALL  GETDATA
      CALL  BD100
      LD    B,3
      CALL  SPCS
      LD    A,HRDATA
      CALL  GETDATA
      CALL  BD100
      JP    MAIN

;     DB    CR
;        DB      '12345678901234567890123456'
;     DB    '#####    #:###    ####   ####'
;     DB    CR
      DB    '   H         2B      3B     HR'
;     DB    CR
      DB    '*'
      DW    PUTH
;     DB    '####      ####    ####   ####'


SCRN24:
      DB    '+'
      DB    FUN4+FUN1+FUN2+FUN3+CURRGHT    ;0FFH      ;ENABLE ALL KEYS
;     DB    '12345678901234567890123456

      DB    '*'
      DW    PPNAM

;     DB    'X.LAST NAME              POS'
;     DB    CR
;     DB    'CITY,TEAMNAME           ##'
;     DB    CR
      DB    '  ID               G        E'
;     DB    '####             ####     ####'
;     DB    '              G          E'
;     DB    CR
      DB    '*'
      DW    PUTG

;     DB    '             ####      ####'
;     DB    CR
;     DB    '                       CHA'
      DB    CR
;     DB    '                      #####'
      DB    CR

      DB    CR
      DB    '1989        TREND       LIFE'
```

```
WKY24:
      DB    '?'

      DB    '>'
      DB    FUN4
      DW    SCRN22

      DB    '*'
      DW    SETTYPE

      DB    '>'
      DB    CURRGHT
      DW    SCRN23



      DB    '>'
      DB    FUN1
      DW    SCRN24

      DB    '>'
      DB    FUN2
      DW    TREND

      DB    '>'
      DB    FUN3
      DW    SCRN24

      DB    '@'
      DW    WKY24

PUTG:
;  ID                G       E
;'####1234567890####1234####'
      LD    HL,(PLAYER)
      CALL  BD1000
      LD    B,10
      CALL  SPCS
      LD    A,GDATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,4
      CALL  SPCS
      LD    A,EDATA
      CALL  GETDATA
      CALL  BD1000
      JP    MAIN
;     DB    '####123456###1234###123###'
;     DB    '                    G       E'
;     DB    '                ####    ####'


SCRN25:
      DB    '+'
      DB    FUN4+FUN1+FUN2+FUN3+CURLFT      ;0FFH       ;ENABLE ALL KEYS
;     DB    '12345678901234567890123456
      DB    '*'
      DW    PPNAM
;     DB    'X.LAST NAME              POS'
;     DB    CR
```

```
;     DB    'CITY,TEAMNAME          ##'
;     DB    CR
;        DB      '12345678901234567890123456'
      DB    '   R     SB'
      DB    CR
      DB    '*'
      DW    PUTR

;     DB    '####    ###'
      DB    CR
      DB    ' RBI     CS    SLG'
      DB    CR
      DB    '*'
      DW    PUTRBI

;     DB    '####   ####  #.###'
      DB    CR
      DB    '                          '
      DB    CR
      DB    '1989       TREND      LIFE'


WKY25:
      DB    '?'

      DB    '>'
      DB    FUN4
      DW    SCRN22

      DB    '*'
      DW    SETTYPE


      DB    '>'
      DB    CURLFT
      DW    SCRN23

      DB    '>'
      DB    FUN1
      DW    SCRN25

      DB    '>'
      DB    FUN2
      DW    TREND

      DB    '>'
      DB    FUN3
      DW    SCRN25
      DB    '@'
      DW    WKY25

TRENDP:
      DB    '+'
      DB    FUN4
;     DB    '12345678901234567890123456
      DB    '*'
      DW    PPNAM
;     DB    'X.LAST NAME            POS'
      DB    CR
```

```
;     DB    'CITY,TEAMNAME          ##'
;     DB    CR
;        DB      '12345678901234567890123456'
      DB    '  ERA       K      WA      PR'
;     DB    '#.###123####123####123####
;
;     DB    '#.###123####123####123####

      DB    '*'
      DW    PUTTERA
      DB    '?'
      DB    '*'         ;GET ME BACK... TO CURRENT
      DW    RFTRDA
RFTRDA:
      SUB   A
      LD    (TYPE),A
      LD    HL,SCRN23A
      JP    SPTN
PUTTERA:
      SUB   A
LTERA:
      LD    (TYPE),A
      CALL  CALERA          ;CALULATE ERA
      LD    B,3
      CALL  SPCS
      LD    A,KDATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,3
      CALL  SPCS
      LD    A,WADATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,3
      CALL  SPCS
; PITCHING RATIO.... WHAT A PAIN...
      LD    A,HADATA
      CALL  GETDATA
      PUSH  HL
      LD    A,WADATA
      CALL  GETDATA
      POP   DE
      ADD   HL,DE
; TEST FOR ZERO HERE
      LD    A,L
      OR    H
      JR    Z,ERRPR     ;SUPER STAR ON HIT OR WALKS
NSPRSTR:
      PUSH  HL          ;WA + HA  SAVE IT  * 3
      POP   DE
      ADD   HL,HL
      ADD   HL,DE
     PUSH HL          ;SAVE (WA+HA) * 3

     SUB   A
     LD    (DPP),A     ;DEMICAL POINT PLACEMENT = 3 NO DP
     LD    HL,2
FDP:
     LD    (CONT),HL
```

```
    POP  HL
    PUSH HL

    LD   (TMP),HL        ;(WA+HA)*3

    LD   HL,0
    LD   (TMP+2),HL

    LD   A,IPDATA
    CALL GETDATA
    LD   BC,(CONT)
    CALL MULTPLY
    POP  HL
    PUSH HL          ;IP
    CALL DIVIDE
    LD   DE,200
    AND  A
    SBC  HL,DE
    JR   NC,NMULT10
    LD   A,(DPP)
    CP   3
    JR   NC,NMULT10      ;DONE..
    INC  A
    LD   (DPP),A
; GET CONSTANT MULT BY 10
    LD   HL,(CONT) ;NEED CONSTANT
; MULT BY 10
    ADD  HL,HL
    PUSH HL
    POP  DE
    ADD  HL,HL
    ADD  HL,HL
    ADD  HL,DE
    JR   FDP
; NUMBER TOOOOOO BIG..... MORE THAN 3 DIGITS
ERRPR:
    LD   A,'-'
    RST  OUTCH
    RST  OUTCH
    RST  OUTCH
    RST  OUTCH
    JR   FOP
NMULT10:
    ADD  HL,DE

    SRL  H           ;ROUND UP
    RR   L
    JR   NC,RNDUPA
; ROUND UP.....
    INC  HL
RNDUPA:
    POP  DE          ;LALANCE STACK
    LD   DE,100
    LD   B,1
    CALL CKDP
    CALL BCDCONV
    LD   DE,10
    CALL CKDP
    CALL BCDCONV
```

```
      CALL CKDP
      LD   A,L
      ADD  A,30H
      RST  OUTCH
FOP:
      LD   A,(TYPE)
      AND  A
      JP   NZ,MAIN
      CALL DOCR
      LD   A,2
      JP   LTERA

CKDP:
      LD   A,(DPP)
      CP   3
      JR   NZ,DT

      LD   A,'.'
      RST  OUTCH

      LD   A,3
DT:
      INC  A
      LD   (DPP),A
      RET


TREND:
; NON-PITCHER TREND SCREEN

      DB   '+'
      DB   FUN4
;     DB   '12345678901234567890123456
      DB   '*'
      DW   PPNAM
;     DB   'X.LAST NAME              POS'
      DB   CR
;     DB   'CITY,TEAMNAME            ##'
;     DB   CR
;        DB     '12345678901234567890123456'
      DB   '   BA      HR      SB     RBI'
;     DB   '#.###123####123####123####
;
;     DB   '#.###123####123####123####


      DB   '*'
      DW   PUTTBA
      DB   '?'
      DB   '*'        ;GET ME BACK... TO CURRENT
      DW   RFTRD
RFTRD:
      SUB  A
      LD   (TYPE),A
      LD   HL,SCRN23
      JP   SPTN
;     DB   '   BA      HR      SB     RBI'
;     DB   '#.###123####123####123####
```

```
PUTTBA:
     SUB  A
NLTRND:
     LD   (TYPE),A  ;SET TO CURRENT SEASON
; GET HITS
     LD   A,HDATA
     CALL GETDATA
     PUSH HL        ;SAVE HITS
     LD   A,ABDATA
     CALL GETDATA
     POP  DE        ;RESTORE HITS IN DE
     PUSH HL        ;SAVE @ BATS
     EX   DE,HL          ;HL CONTAINS HITS

     LD   BC,2000        ;* 2000
     CALL MULTPLY        ;2000*HITS

     POP  HL        ;POP

     CALL DIVIDE
     CALL PUTFACT        ;PUT UP BA #.###
     LD   B,3
     CALL SPCS
     LD   A,HRDATA
     CALL GETDATA
     CALL BD1000
     LD   B,3
     CALL SPCS
     LD   A,SBDATA
     CALL GETDATA
     CALL BD1000
     LD   B,3
     CALL SPCS
     LD   A,RBIDATA
     CALL GETDATA
     CALL BD1000
     LD   A,(TYPE)
     AND  A
     JR   NZ,FSH
     CALL DOCR
     LD   A,2       ;TRENDS DATA
     JR   NLTRND
FSH:
     JP   MAIN

;       DB     '12345678901234567890123456'
;    DB   '   R     SB'
;    DB   '####1234###'
PUTR:
     LD   A,RDATA
     CALL GETDATA
     CALL BD1000
     LD   B,4
     CALL SPCS
     LD   A,SBDATA
     CALL GETDATA
     CALL BD100
     JP   MAIN
;    DB   ' RBI     CS    SLG'
```

```
;     DB    '####123####12#.###'
PUTRBI:
      LD    A,RBIDATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,3
      CALL  SPCS
      LD    A,CSDATA
      CALL  GETDATA
      CALL  BD1000
      LD    B,2
      CALL  SPCS
; OK SLUGGING PERCENTAGE..
      LD    A,HDATA
      CALL  GETDATA
      PUSH  HL    ;SAVE HL
      LD    A,B2DATA
      CALL  GETDATA
      EX    DE,HL
      POP   HL
      ADD   HL,DE
      PUSH  HL
      LD    A,B3DATA
      CALL  GETDATA
      EX    DE,HL
      POP   HL
      ADD   HL,DE
      ADD   HL,DE
      PUSH  HL
      LD    A,HRDATA
      CALL  GETDATA
      EX    DE,HL
      POP   HL
      ADD   HL,DE
      ADD   HL,DE
      ADD   HL,DE
      PUSH  HL          ;SAVE TOP OF SLG VALUE

      LD    A,ABDATA
      CALL  GETDATA
      POP   DE          ;RESTORE TOP VALUE
      PUSH  HL          ;SAVE DIVISOR
      EX    DE,HL

; HL NOW HAS IPDATA...
; GET

      LD    BC,2000
      CALL  MULTPLY
      POP   HL
      CALL  DIVIDE

      CALL  PUTFACT
      JP    MAIN
UPDATE:
      DB    '+'
      DB    0FFH ;DISABLE ALL KEYS
;     DB    '12345678901234567890123456'
      DB    '     UPDATE PROGRAM'
      DB    CR
      DB    CR
```

```
      DB    '  ATTACH PICKUP TO PHONE'
      DB    CR
      DB    CR
      DB    CR
      DB    CR
      DB    CR
      DB    ' PRESS ANY KEY WHEN READY'
      DB    '?'
      DB    '>'
      DB    FUN4
      DW    SCRN02     ;GOTO MAIN SCREEN
UPDAIL:
      DB    '+'
      DB    0FFH ;ENABLE RETURN ONLY....
      DB    '       UPDATE PROGRAM'
      DB    CR
      DB    '         PLEASE DIAL'
      DB    CR
      DB    CR
      DB    '   AL      1-900-456-1234'
      DB    CR
      DB    '   NL      1-900-456-6789'
      DB    CR
      DB    CR
      DB    CR
      DB    ' PRESS ANY KEY WHEN DIALED'
      DB    '?'
      DB    '>'
      DB    FUN4
      DW    SCRN01

      DB    '+'         ;CLEAR SCREEN
      DB    FUN4 ;ONLY ALLOW FUNTION 4 TO PASS
; ENABLE FUN4 ONLY
      DB    '$'  ;LOAD TIMER
      DB    150  ;2.5 MINUTES

      DB    '+'
      DB    00
      DB    CR,CR,CR,CR
      DB    '      DOWNLOAD COMPLETE'
      DB    '$'
      DB    5    ;5 SECONDS
      DB    '@'
      DW    SCRN01     ;MAIN SCREEN.

; LET DO THE MODEM SOFTWARE... NOW...
MYTEAM:
      DB    '+'
      DB    FUN1+FUN3+FUN4
      DB    '            MY TEAM'
      DB    CR
      DB    CR
      DB    '   1. CREATE/EDIT TEAM'
      DB    CR
      DB    CR
      DB    '   2. SHOW TEAM'
      DB    CR,CR,CR
      DB    '1                              2'
LMYTM:
```

```
      DB    '?'  ;GET KEY
      DB    '*'
      DW    SELWICH

;     DB    '>'
;     DB    FUN1
;     DW    CRTEAM      ;CREAT TEAM
;     DB    '>'
;     DB    FUN3
;     DW    SHTEAM      ;SHOW TEAM
      DB    '@'
      DW    LMYTM           ;GOTO LMYTM
SELWICH:
      SUB   A
      LD    (FLAG),A    ;CLEAR ALL FLAGS

      LD    HL,SCRN02       ;BACK UP 1 SCREEN
      LD    A,(ACC)
      CP    FUN4
      JR    Z,SPTN          ;GOTO SCRN02

      CP    FUN1
      JR    Z,SETSEL
      CP    FUN3
      JR    Z,SETSHW
      JP    MAIN

SETSEL:
      LD    A,(FLAG)
      SET   SEL,A
      RES   SHOW,A
      LD    (FLAG),A        ;SET SELECT FLAG
      LD    HL,SCRN20
SPTN:
      LD    (POINTER),HL    ;GOTO ROSTER STUFF.
      JP    MAIN
SETSHW:
      SUB   A
      LD    (ROSTOFF),A     ;SET TO BEGIN OF ROSTER
      LD    (ACC),A         ;PUTEAM DOES CAN DATA

      LD    A,(FLAG)
      SET   SHOW,A
      RES   SEL,A
      LD    (FLAG),A        ;SET SELECT FLAG

      LD    A,(MLLEN+NUMDIV)    ;TLEG          ;LEAGUE NUMBER MAX..
      LD    (WLEAGUE),A     ;POINTERS TO MY ROSTER
      LD    HL,SCRN22
      LD    (POINTER),HL
      JP    MAIN        ;PUT UP ROSTER..

CATLEDBB:
      DB    '+'
      DB    FUN1+FUN2+FUN3+CURDWN+FUN4    ;0FFH     ;ENABLE    ALL
KEYS ;CLEAR SCREEN
      DB    '     CURRENT SEASON      '
      DB    CRDWN
;     DB    CR
      DB    '    BATTING LEADERS'
      DB    CR
```

```
        DB    CR
;       DB    '12345678901234567890123456
        DB    '  1. BATTING AVERAGE - BA'
        DB    CR
        DB    '  2. HOME RUNS - HR'
        DB    CR
        DB    '  3. RUNS BATTED IN - RBI'
        DB    CR
        DB    CR
        DB    '1            2            3'
WCATLEDBB:
        DB    '?'
        DB    '>'
        DB    FUN4
        DW    SCRN17
        DB    '>'
        DB    CURDWN
        DW    CNTBB          ;SORTED BAS
        DB    '*'
        DW    LEDBB
        DB    '@'
        DW    WCATLEDBB
LEDBB:
        LD    A,(ACC)
        CP    FUN1
        JP    Z,SRTBA
        CP    FUN2
        JP    Z,SRTHR
        CP    FUN3
        JP    Z,SRTRBI
        JP    MAIN
CNTBB:
        DB    '+'
        DB    FUN1+FUN3+CURUP+FUN4      ;0FFH      ;ENABLE ALL KEYS
;CLEAR SCREEN
        DB    '      CURRENT SEASON       '
        DB    CRUP
;       DB    CR
        DB    '     BATTING LEADERS'
        DB    CR
        DB    CR
;       DB    '12345678901234567890123456
        DB    '  4. STOLEN BASES - SO'
        DB    CR
        DB    CR
        DB    '  5. HIT - H'
        DB    CR
        DB    CR
        DB    '4                          5'
WBB:
        DB    '?'
        DB    '>'
        DB    CURUP
        DW    CATLEDBB       ;SORTED BAS
        DB    '>'
        DB    FUN4
        DW    SCRN17
        DB    '*'
        DW    CWBB
        DB    '@'
```

```
      DW    WBB
CWBB:
      LD    A,(ACC)
      CP    FUN1
      JP    Z,SRTSO
      CP    FUN2
      JP    Z,SRTH
      CP    FUN3
      JP    Z,SRTH
      JP    MAIN

SRTHR:
      LD    A,6
      JR    SRT
SRTRBI:
      LD    A,7
      JR    SRT
SRTH:
      LD    A,9
      JR    SRT
SRTSO:
      LD    A,8
      JR    SRT
SRTERA:
      SUB   A
      JR    SRT
SRTK:
      LD    A,1
      JR    SRT
SRTSV:
      LD    A,2
      JR    SRT

SRTRP:
      LD    A,4
      JR    SRT
SRTWL:
      LD    A,3
      JR    SRT


SRTBA:
      LD    A,5   ;BATTING AVERAGE
SRT:
; INTERRUPT SHOULD BE DISABLE HERE
      DI

      CALL WHOQUAL

      EI

      LD    A,0FFH
      LD    (KMASK),A ;CLEAR KEY MASK

 ; INIT TOP OF SCREEN...
      SUB   A
 NCATL:
      LD    (CATLEDS),A     ;INIT TOP OF CATAGORY LEADS

      CALL CLRSCRN
```

```
; FALL INTO CATALORY LISTS...
; LISTP HAS LIST OF PLAYERS
; NLIST HAS NUMBER OF PLAYER IN LIST
; FIRST PUT UP HEADER..
     LD   HL,CTITLE      ;CATAGORY LEADER IN
LDOP:
     LD   A,(HL)
     CP   CR
     JR   Z,SLTIT
     RST  OUTCH
     INC  HL
     JR   LDOP

SLTIT:
     LD   C,0
     LD   HL,LTITLES     ;LIST OF TITLES HEADINGS
LFTITLE:
     LD   A,(CATSCRN)    ;WHICH SCREEN
     CP   C
     JR   Z,GCATS   ;GOT THE SCREEN
     INC  C
; FIND CARRIGE RETURN
NCR:
     LD   A,(HL)
     INC  HL
     CP   CR
     JR   NZ,NCR
     JR   LFTITLE
GCATS:
     LD   A,(HL)
     INC  HL
     CP   CR
     JR   Z,DCATS
     RST  OUTCH
     JR   GCATS
DCATS:
     CALL DOCR
     CALL DOCR
; LIST PLAYERS.....
; OK LIST PLAYERS....
; FORMAT IS
; NAME,CITY, DATA...

     LD   A,(CATLEDS)

     LD   C,A
; LIST COUNTER
AHEY:
     LD   A,(NLIST) ;NUMBER OF PLAYERS IN LIST
     AND  A
     JP   Z,NPLYERS ;NO PLAYERS TO LIST
     CP   C    ;DONE:
     JP   Z,NPLYERS ;DONE...
     LD   A,(CATLEDS)
     ADD  A,5
     CP   C
     JP   Z,NPLYERS

     LD   A,C
     ADD  A,A  ;MULTPLY BY 2
```

```
        LD    HL,LISTP
        RST   CONV
        LD    A,(HL)
        INC   HL
        LD    H,(HL)
        LD    L,A
        LD    (PLAYER),HL
  ; HL CONTAINS PLAYERS ID NUMBER
        PUSH BC
        CALL SETNAMS

      LD    A,15 ;SET CURRSOR X POSITION
      LD    (CURSOR+1),A    ;MSB
      SUB   A
      LD    (TYPE),A  ;GET CITY NAME
      LD    A,TMDATA  ;GET TEAM DATA
      CALL GETDATA          ;GET DATA
      LD    A,L
      AND   1FH         ;ONLY LOOK @ TEAM
      LD    B,A
      ADD   A,A
      ADD   A,B
      LD    HL,LEG          ;POINT TO CITY
      RST   CONV
      LD    B,3
OCR:
      LD    A,(HL)
      RST   OUTCH
      INC   HL
      DJNZ OCR
  ; DISPLAY SORTED VALUE
      LD    A,19
      LD    (CURSOR+1),A    ;COLUMN
      CALL GETDFUNC

      CALL DOCR

      POP   BC
      INC   C
      JP    AHEY
GETDFUNC:
      CALL GETFUNC    ;GET FUNCTION IN QUESTION
      EX    DE,HL
      LD    A,(CATSCRN)
      ADD   A,A
      LD    HL,LDFUNC ;LIST OF DISPLAY FUNCTIONS
      RST   CONV
      LD    A,(HL)
      INC   HL
      LD    H,(HL)
      LD    L,A
      PUSH HL
      EX    DE,HL
      RET         ;GOTO...
LDFUNC:
      DW    PUTFACT    ;ERA
      DW    BD10000    ;K'S
      DW    BD10000    ;SAVES
      DW    BD10000    ;WINS
      DW    PUTFACT    ;PITCHING RATIO
      DW    PUTFACT ;BATTING AVERAGE
```

```
      DW    BD10000    ;HR
      DW    BD10000    ;RBI
      DW    BD10000    ;SO
      DW    BD10000    ;HITS

NPLYERS:
; DETERMINE CURSOR POSITION
      LD    H,26
      LD    L,0
      LD    (CURSOR),HL
; POINT CURSOR TO TOP LEFT HAND CORNER
      LD    C,CRUP
      LD    A,(CATLEDS)
      AND   A
      JR    NZ,SETCURS
; OK BUT IS IT DOWN OR NOTHING
      LD    C,CRDWN
      LD    B,A
      LD    A,(CATLEDS)
      ADD   A,5
      CP    B
      JR    NC,SETCURS
      LD    C,' '      ;NOTHING
SETCURS:
      LD    A,C
      RST   OUTCH

      LD    HL,WKEYSB
      LD    (POINTER),HL
      JP    MAIN
WKEYSB:
      DB    '?'  ;WAIT FOR KEY
; OK GOT A KEY
      DB    '*'
      DW    CATS
CATS:
      LD    A,(ACC)
      CP    CURUP
      JR    NZ,NCRP

      LD    A,(CATLEDS)
      AND   A
      JR    Z,NPLYERS ;NOPE
      SUB   A         ;LIST FROM TOP
      JP    NCATL
NCRP:
      CP    CURDWN
      JR    NZ,NCRDWN
;
      LD    A,(NLIST) ;TOTAL NUMBER OF PLAYERS ON LIST
      LD    B,A
      LD    A,(CATLEDS)
      ADD   A,5
      CP    B
      JR    NC,NPLYERS
      LD    A,5
      JP    NCATL
NCRDWN:
      CP    FUN4
      JR    NZ,NPLYERS
      LD    A,(CATSCRN)
```

```
      ADD   A,A
      LD    HL,READDS ;RETURN ADDRESSES
      RST   CONV
      LD    A,(HL)
      INC   HL
      LD    H,(HL)
      LD    L,A
      LD    (POINTER),HL
      JP    MAIN
READDS:
      DW    CATLEDPH
      DW    CATLEDPH
      DW    CATLEDPH
      DW    CNTPH
      DW    CNTPH
      DW    CATLEDBB
      DW    CATLEDBB
      DW    CATLEDBB
      DW    CNTBB
      DW    CNTBB



CTITLE:
;     DB    '12345678901234567890123456


      DB    'CATAGORY LEADERS IN '
      DB    CR
LTITLES:
      DB    'ERA'
      DB    CR
      DB    'K'
      DB    CR
      DB    'SV'
      DB    CR
      DB    'WINS'
      DB    CR
      DB    'PR'
      DB    CR
      DB    'BA'
      DB    CR
      DB    'HR'
      DB    CR
      DB    'RBI'
      DB    CR
      DB    'SO'
      DB    CR
      DB    'H'
      DB    CR

      LD    BC,26       ;NUMBER OF CHARACTERS

CATLEDPH:
      DB    '+'
      DB    FUN1+FUN2+FUN3+CURDWN+FUN4     ;0FFH      ;ENABLE     ALL
KEYS ;CLEAR SCREEN
      DB    '      CURRENT SEASON      '
      DB    CURDWN
```

```
      DB    CR
      DB    '     PITCHING LEADERS'
      DB    CR
;     DB    '12345678901234567890123456
      DB    CR
      DB    ' 1. EARNED RUN AVERAGE-ERA'
;     DB    CR
      DB    ' 2. STIKE OUTS - K'
      DB    CR
      DB    ' 3. SAVES - SV'
      DB    CR
      DB    CR
      DB    '1            2            3'
WCATLEDPH:
      DB    '?'
      DB    '>'
      DB    CURDWN
      DW    CNTPH

      DB    '>'
      DB    FUN4
      DW    SCRN17
      DB    '*'
      DW    BCNTPH
      DB    '@'
      DW    WCATLEDPH
BCNTPH:
      LD    A,(ACC)
      CP    FUN1
      JP    Z,SRTERA
      CP    FUN2
      JP    Z,SRTK
      CP    FUN3
      JP    Z,SRTSV
      JP    MAIN

CNTPH:
      DB    '+'
      DB    FUN1+FUN3+CURUP+FUN4      ;0FFH      ;ENABLE ALL KEYS
;CLEAR SCREEN
      DB    '      CURRENT SEASON      '
      DB    CURUP
      DB    '     PITCHING LEADERS'
      DB    CR
;     DB    '12345678901234567890123456
      DB    CR
      DB    ' 4. WINS & LOSES'
      DB    CR
      DB    CR
      DB    ' 5. PITCHING RATIO - RP'
      DB    CR
      DB    CR
      DB    '4                        5'
WPH:
      DB    '?'
      DB    '>'
      DB    CURUP
      DW    CATLEDPH

      DB    '>'
```

```
        DB    FUN4
        DW    SCRN17
        DB    '*'
        DW    BWPH
        DB    '@'
        DW    WPH
BWPH:
        LD    A,(ACC)
        CP    FUN1
        JP    Z,SRTWL
        CP    FUN2
        JP    Z,SRTRP
        CP    FUN3
        JP    Z,SRTRP
        JP    MAIN

        POOP
;*************************************
;*************************************
; START OF USER MEMORY  8000-FFFF
;*************************************
;*************************************
        ORG  8000H
STRAM:
; CHARACTERS 40X8 CHARACTER BY LINES.
; SAME AS KEY EXECPT BIT SET WHEN CHANGED.
;*************************************
;*************************************
; START OF DISPLAY MEMORY
DSPADD:
;       EQU  9000H
;
;
;*************************************
DISPLAY   DS   20*64
; DISPAY - TEAM STANDING TO CALULATION
;          OF TEAM STANDING

REMEM     EQU  1
TDAT EQU  5     ;OFFSET INTO DISPLAY
SDAT EQU  7     ;OFFSET INTO DISPLAY USED IN SORT
PRT1 EQU  10
PRT2 EQU  11
DBUFFER   EQU  12
EDISP:
DISIZE    EQU  EDISP-DISPLAY

CATLEDS   DS   1     ;USED IN CATAGORY FOR LIST LENGTHS
CATSCRN   DS   1     ;WHICH CATAGORY WE ARE LISTING

FUNCTION  DS   2
TSORT     DS   1

NLIST     DS   1     ;LENGTH OF SORT
CURPAG    EQU  NLIST      ;USED IN INFO/YESTERDAYS GAMES
LISTP     DS   10*2 ;LIST OF 10 PLAYERS ID'S USED
               ;IN ALL CATAGORY STANDING STUFF
PAGNUM    EQU  LISTP           ;(1 BYTE USED IN INFO/YESTERDAYS GAME
TXTPTR    EQU  LISTP+1    ;(2 BYTES)   SAME AS ABOVE
TBASE     DS   1     ;USED IN GETDATA ROUTINE AND WRTDATA ROUTINE
```

```
                ; INTERFACE TO DATABASE
CONT DS    2    ;USED IN CALULATION OF PITCHING RATIO.
DPP  DS    1    ;USED IN CALULATION FOR TRENDS, PITCHING RATIO
FLAG DS    1    ;USED TO GENERATE/DISPLAY MY TEAM
SEL  EQU   0    ;ALLOW EDITING AND SELECTING TEAM
SHOW EQU   1    ;ALLOWS TO DISLAY MY TEAM
REQUEST    DS   1    ;USED IN GETDATA ROUTINE TO FIND DATA
PLAYER     DS   2    ;CONTAINS PLAYERS ID
CHOICE     DS   1    ;CHOICE OF 3 FORMATS
SPITCH     DS   2    ;START OF PITCHING ID'S
WDATA      DS   1    ;WHAT IS IT YOU WANT... TYPE DATA
;             SEE TABLE  ODATA,MDATA,ETC... FOR DETAILS
TYPE DS    1    ;USEDIN DATABASE CODE  IN GETSTUFF
; BIT 0 1/0 PITCH/NONPITCHER
; BIT 2,1   0,0  CURRENT DATA
;           0 1  LIFE TIME DATA
;           1 0  TREND INFO
PTR  DS    2    ;PLAYER POINTER USED IN GETSTUFF
WINS DS    1    ;USED IN TEAM STANDINGS (TEMP) CAL SCREEN
LOSES      DS   1    ;USED IN TEAM STANDINGS (TEMP) CAL SCREEN

WLEAGUE    DS   1    ;WORK REG OF LEAGUE
LEAGUE     DS   1    ;SEE SALE,SALW,SNLE,SNLW ETC
ROSTOFF    DS   1    ;ROSTER OFFSET

POINTER    DS   2    ;TEXT POINTER FOR INTERRUPTOR
ACC  DS    1    ;USED IN KEY ROUTINE AND PART OF TEXT
                ;INTERRUPTOR

KMASK      DS   1    ;ANDED WITH CHNGED KEY TO DETERMINE
                ;IF KEY HIT... WHILE OUTPUTING CHARACTER
                ;ELSE IGNORE OUTPUTING CHARACTERS

KHIT DS    1    ;OUTCHR ROUTINE 'THOUGHT' WE GOT A HIT.

TMP  DS    12

LATCH      DS   1

; INTERRUPT DRIVEN
ITIME      DS   1
HERTZ      DS   1    ;COUNT 50HZ'S
KEY  DS    1
FUN1 EQU   10H
FUN2 EQU   20H
FUN3 EQU   40H
FUN4 EQU   80H
CURUP      EQU  01H
CURDWN     EQU  02H
CURLFT     EQU  04H
CURRGHT    EQU  08H
; ACTIVE LOW SENSE
;0 - UP
;1 - DOWN
;2 - LEFT
;3 - RIGHT
;4 - F1
;5 - F2
;6 - F3
;7 - F4
```

```
KCHNG     DS   1
; INTERRUPT WRITTEN ABOVE

XY   DS   2     ;WHERE IF LD   BC,(XY)
                ; B = X POSITION (0-159)
                ; C = Y POSITION (0-63)
CURSOR    DS   2     ; WHERE IF LD  BC(CURSOR)
                ; B = X CHARACTER POSITION (0-19)
                ; C = Y LINE NUMBER 0-7
REVID     DS   1     ;CONTAIN XOR MASK FOR CGEN
;MASK     DS   1     ;CONTAINS MASK OF SCREEN BYTE

; ALL DATA TO LCD IS XOR WITH THIS BYTE

SCREEN    DS   8*SCRNWID ;ASCII VALUES FOR SCREEN

SCRNSIZ   EQU  8*SCRNWID

CHARPO    DS   2          ;TEMP USED IN CHARACTER OUTPUT
                     ;CGEN POSITION ADDRESS

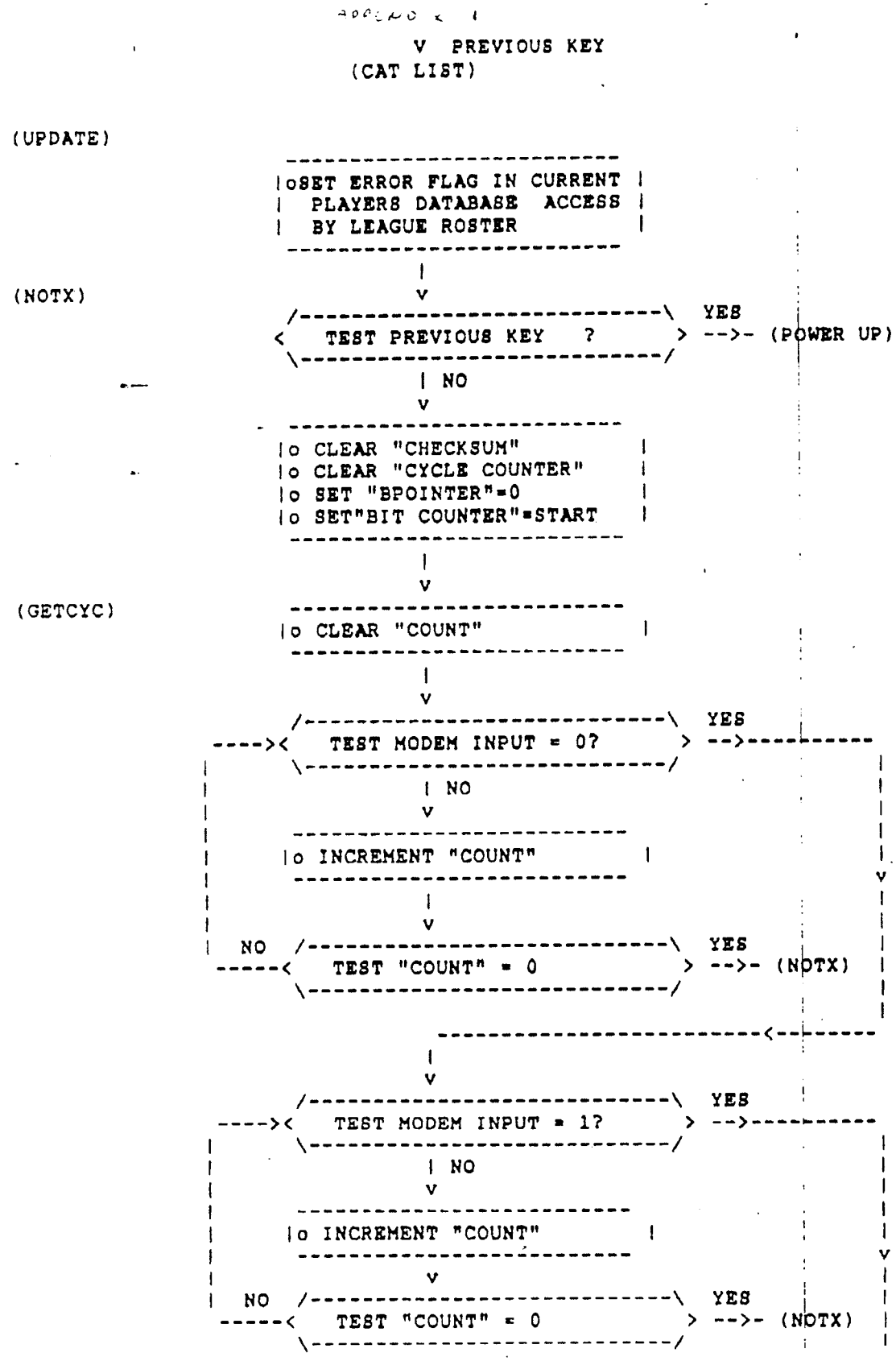
; TEAM STANDINGS....

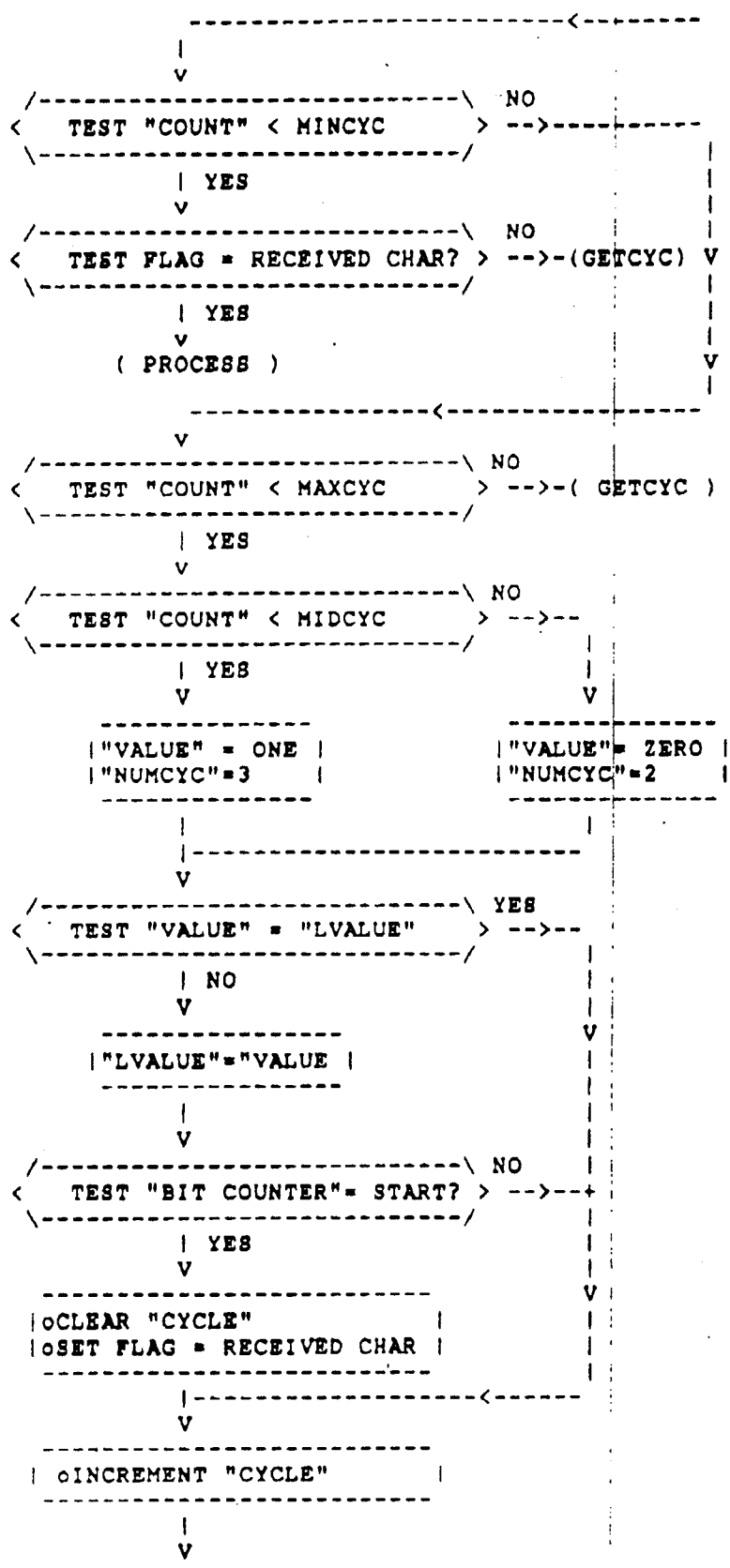
;GAMSTND  DS   2*MXTM     ;TOTLEG  WIN/LOSES IN ORDER BY LEAGUE

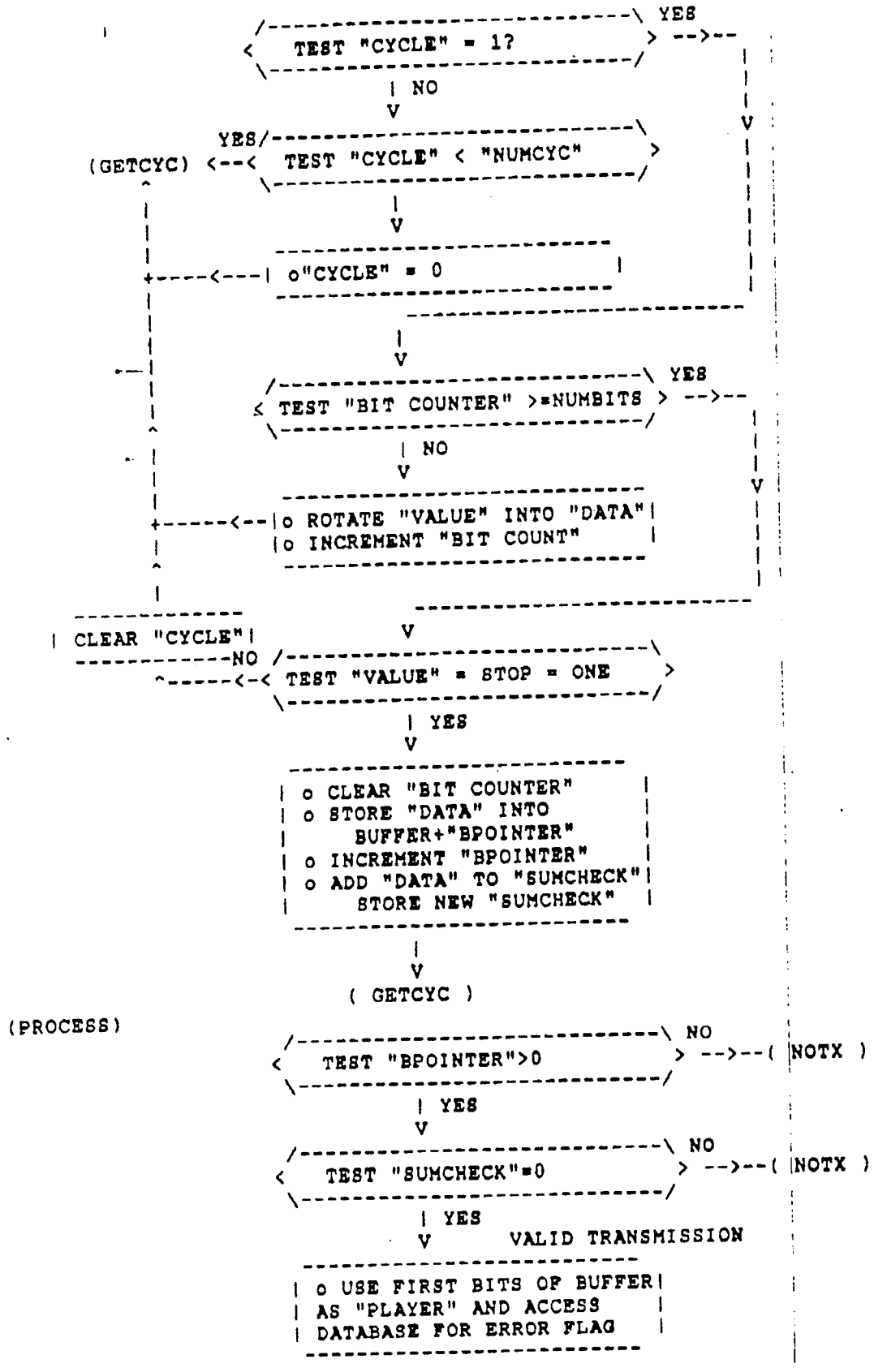
TSTND     DS   MXTM ;TOTLEG    ;TEAM STANDING

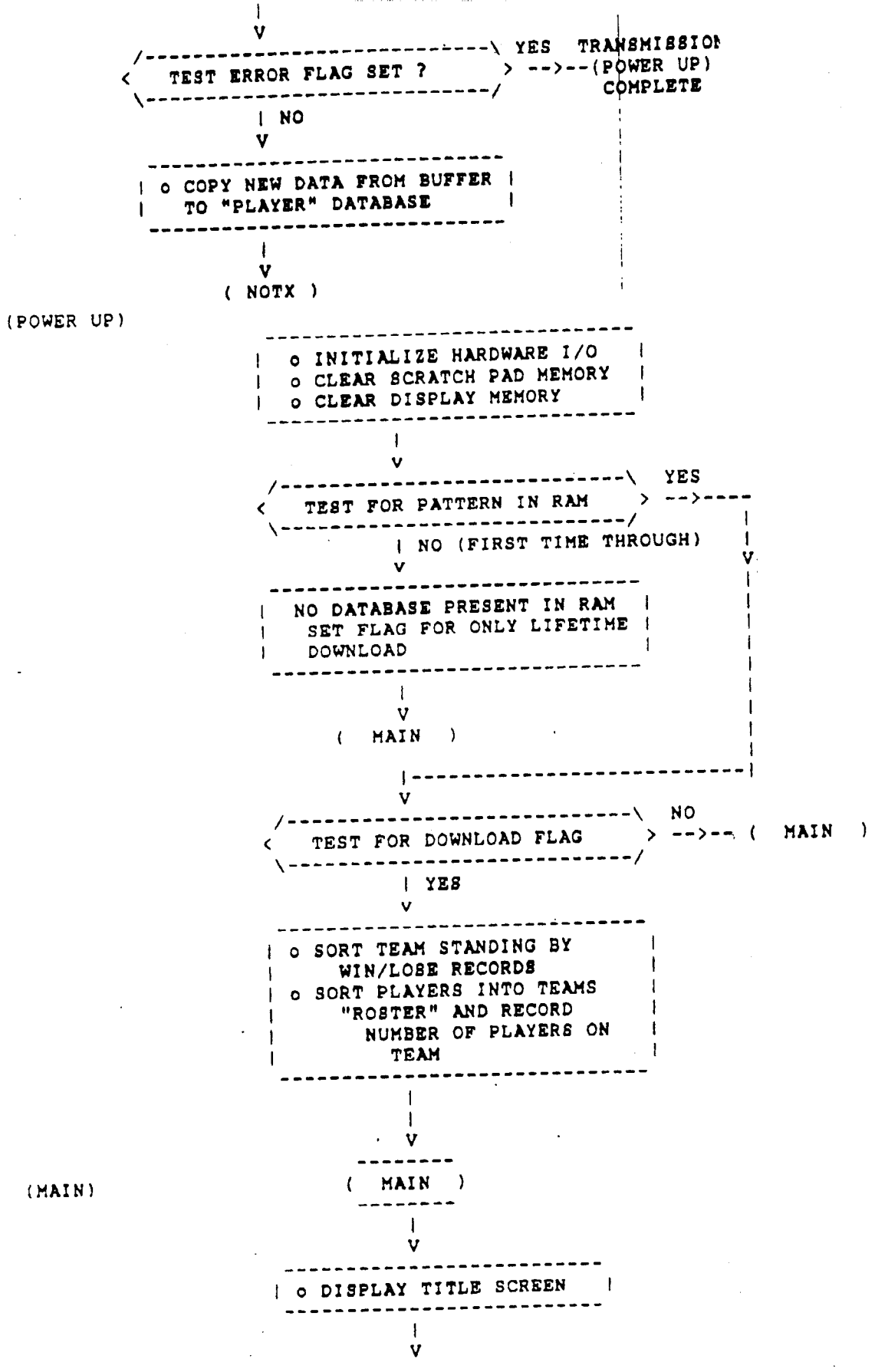
TMLEG     DS   MXTM+1     ;LIST OF TEAM LENGTHS

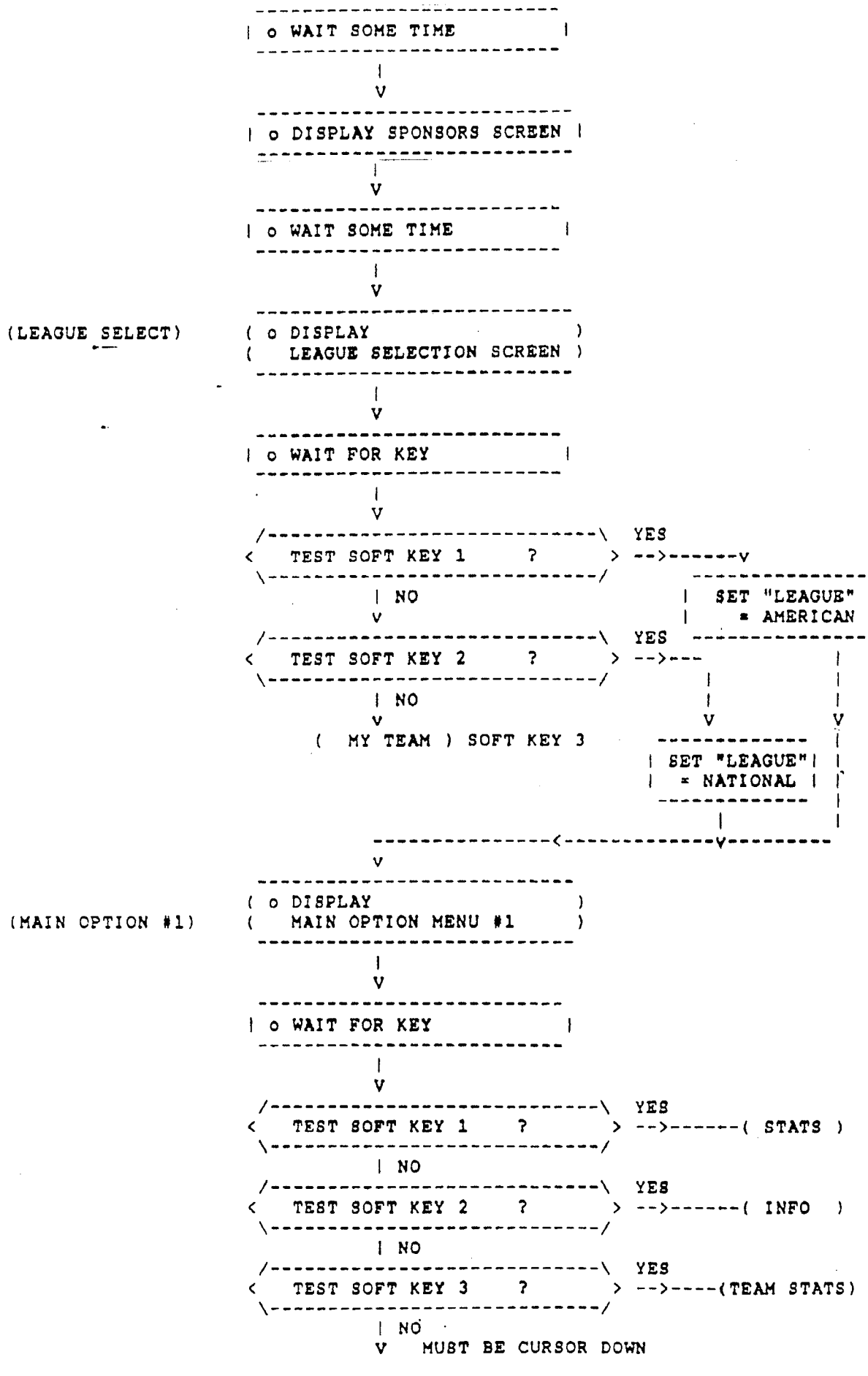
ROSTER    DS   1000*2
     DS   MYNUMPLY*2      ;NUMBER OF PLAYERS
ERAM:
ERRT:
;**********************
;**********************
RSDATAB   EQU  9000H      ;START OF DATABASE
INFRIG    EQU  RSDATAB-ERRT   ;HOPEFULLY WILL GENERATE ERROR
                     ;IF OPERATING SYSTEM INFRINGS ON DATABASE
;**********************
;**********************
; SEE I???? VALUES FOR DEFINITIONS OF DATA
LEGLENS   EQU  ILEGLENS-SDATAB+RSDATAB
MLLEN     EQU  IMLLEN-SDATAB+RSDATAB
NPNAM     EQU  INPNAM-SDATAB+RSDATAB
PNAM EQU  IPNAM-SDATAB+RSDATAB
NPD  EQU  INPD-SDATAB+RSDATAB
PD   EQU  IPD-SDATAB+RSDATAB
TEAMNAMES EQU  ITEAMNAMES-SDATAB+RSDATAB
GAMSTND   EQU  IINITWL-SDATAB+RSDATAB
LEG  EQU  ILEG-SDATAB+RSDATAB
ALNEWS    EQU  IALNEWS-SDATAB+RSDATAB
NLNEWS    EQU  INLNEWS-SDATAB+RSDATAB
ALRESULT  EQU  IALRES-SDATAB+RSDATAB
NLRESULT  EQU  INLRES-SDATAB+RSDATAB
NUMNON    EQU  INUMNON-SDATAB+RSDATAB
NUMPITS   EQU  INUMPITS-SDATAB+RSDATAB
  ;**********************
  ;**********************
  ;**********************
  ;**********************
       END
```

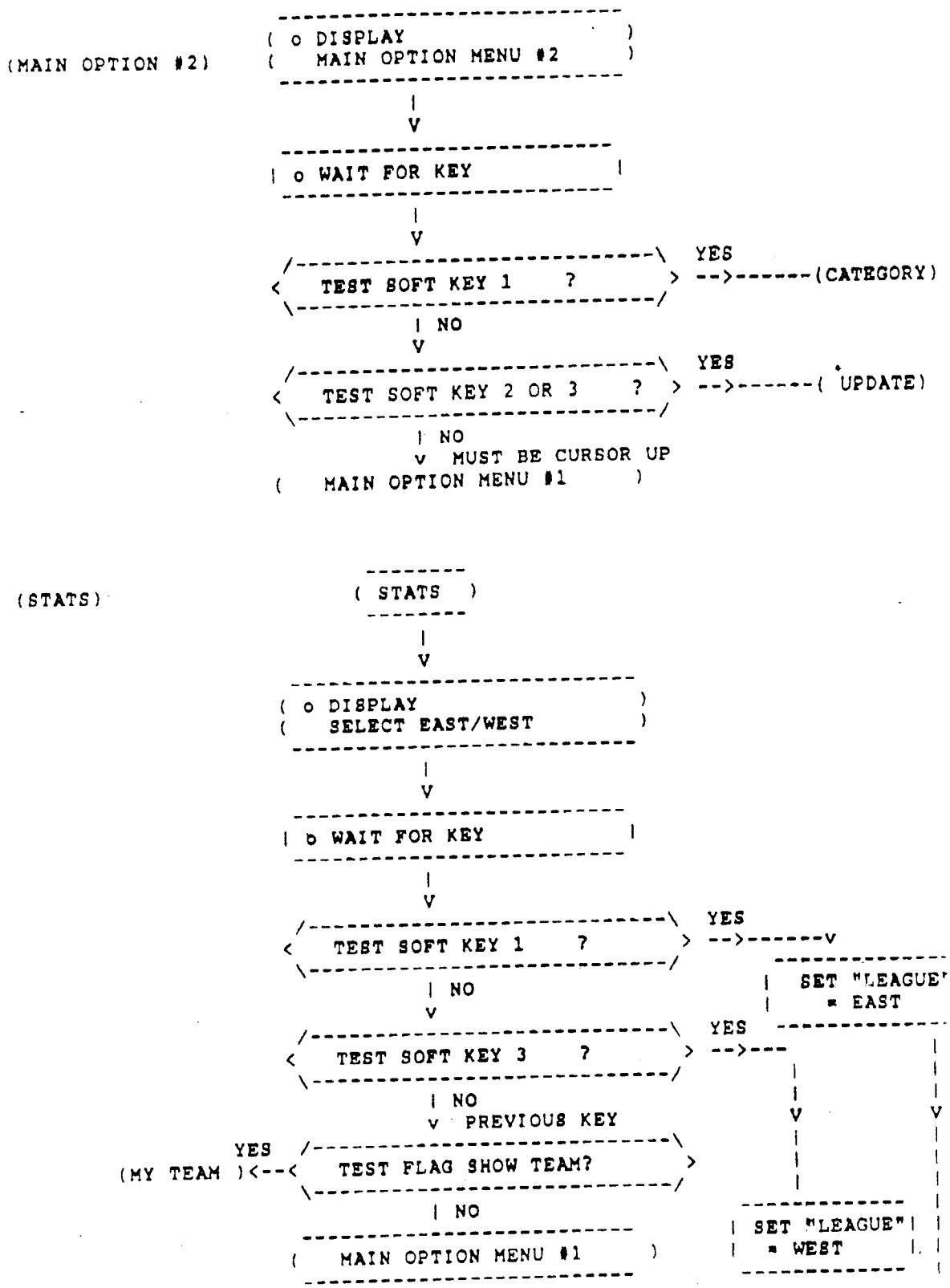

V PREVIOUS KEY
(CAT LIST)
(UPDATE)
oSET ERROR FLAG IN CURRENT PLAYERS DATABASE ACCESS BY LEAGUE ROSTER
(NOTX)
TEST PREVIOUS KEY ?
YES
--> (POWER UP)
NO
o CLEAR "CHECKSUM"
o CLEAR "CYCLE COUNTER"
o SET "BPOINTER"=0
o SET"BIT COUNTER"=START
(GETCYC)
o CLEAR "COUNT"
TEST MODEM INPUT = 0?
YES
NO
o INCREMENT "COUNT"
TEST "COUNT" = 0
YES
NO
--> (NOTX)
TEST MODEM INPUT = 1?
YES
NO
o INCREMENT "COUNT"
TEST "COUNT" = 0
YES
NO
--> (NOTX)

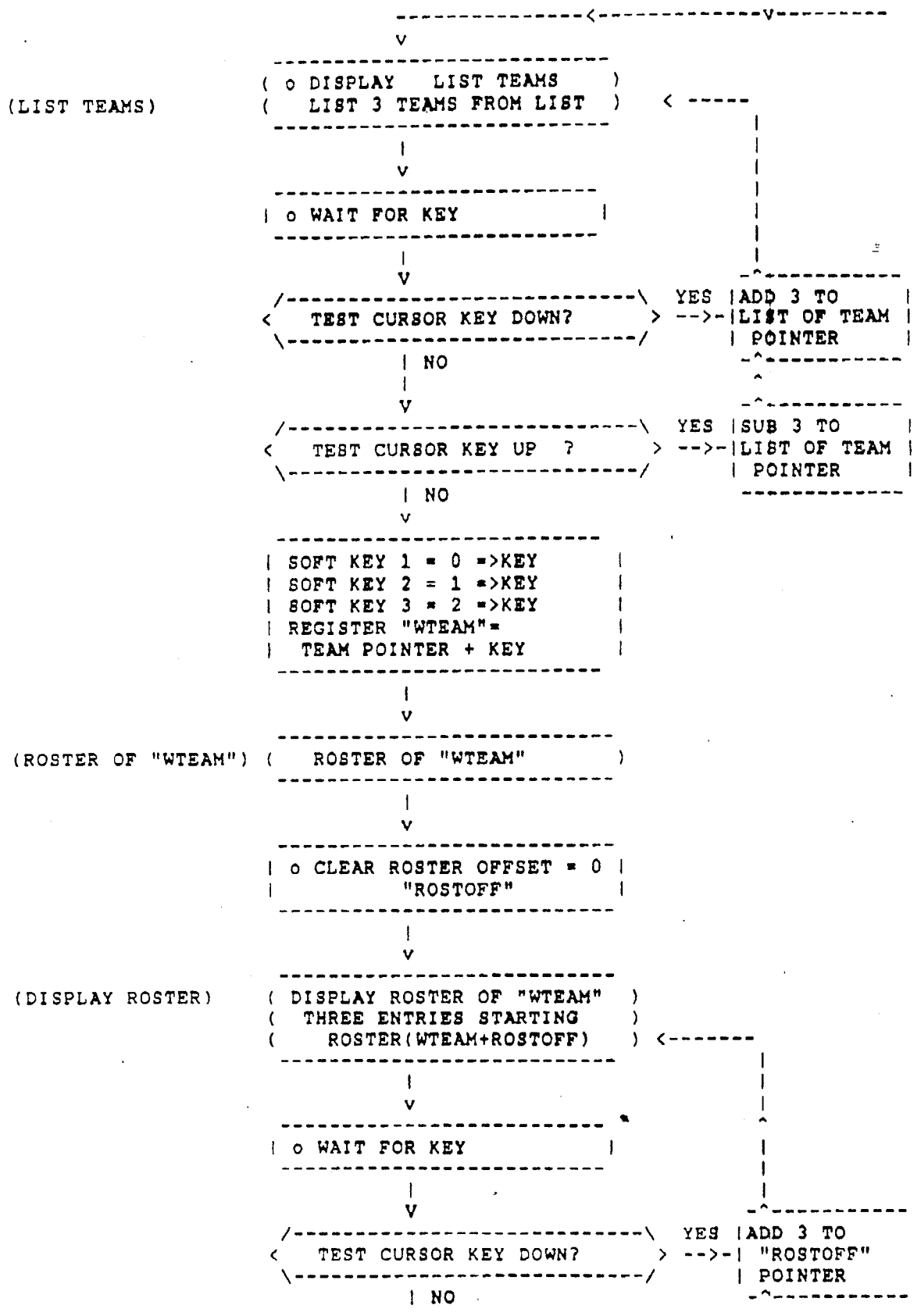

TEST "COUNT" < MINCYC
NO
YES
TEST FLAG = RECEIVED CHAR?
NO
(GETCYC)
YES
(PROCESS)
TEST "COUNT" < MAXCYC
NO
(GETCYC)
TEST "COUNT" < MIDCYC
NO
YES
"VALUE" = ONE
"NUMCYC"=3
"VALUE"= ZERO
"NUMCYC"=2
TEST "VALUE" = "LVALUE"
YES
NO
"LVALUE"="VALUE
TEST "BIT COUNTER"= START?
NO
YES
oCLEAR "CYCLE"
oSET FLAG = RECEIVED CHAR
oINCREMENT "CYCLE"

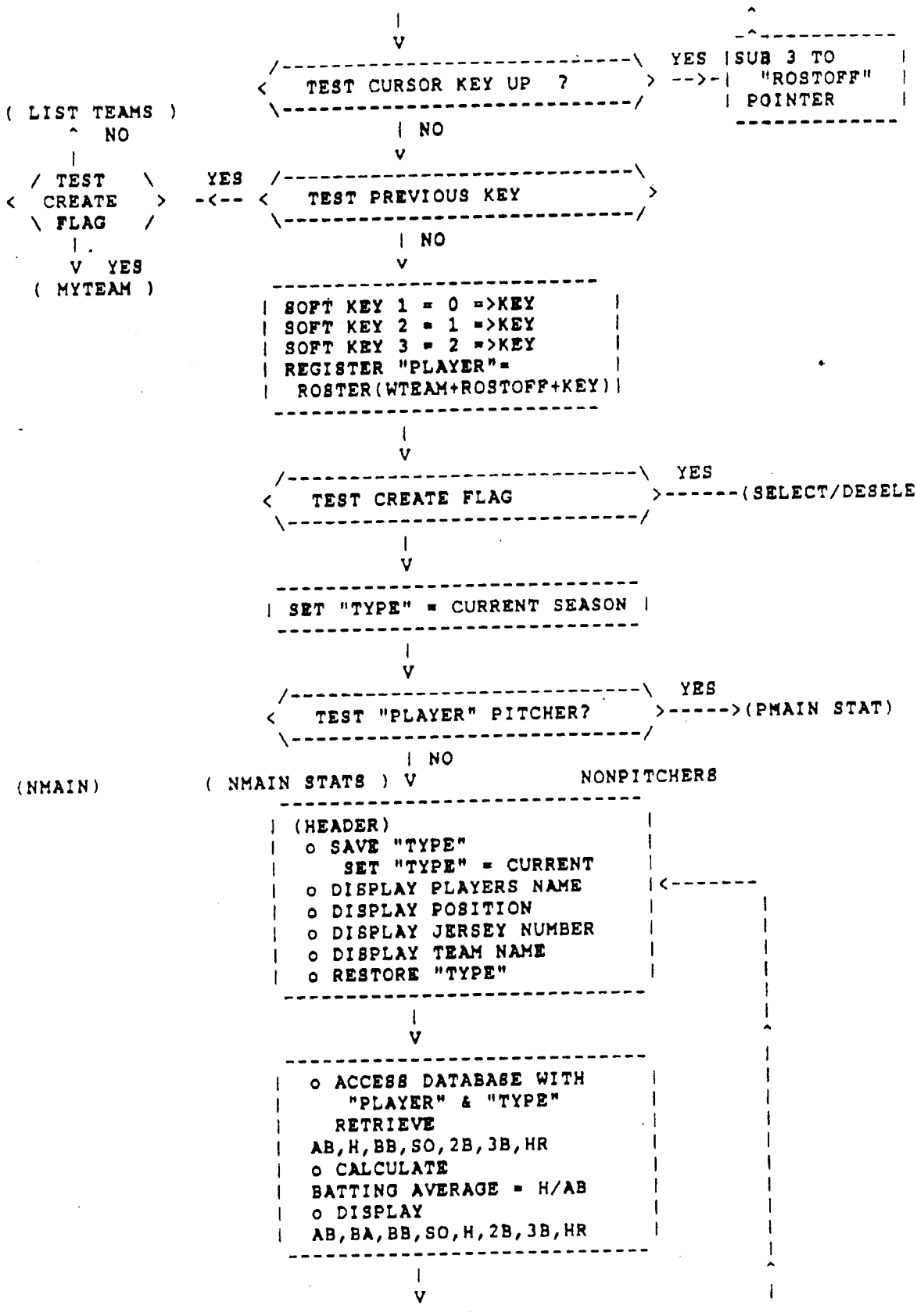

TEST "CYCLE" = 1?
YES
NO
TEST "CYCLE" < "NUMCYC"
YES
(GETCYC)
o"CYCLE" = 0
TEST "BIT COUNTER" >=NUMBITS
YES
NO
o ROTATE "VALUE" INTO "DATA"
o INCREMENT "BIT COUNT"
CLEAR "CYCLE"
TEST "VALUE" = STOP = ONE
NO
YES
o CLEAR "BIT COUNTER"
o STORE "DATA" INTO BUFFER+"BPOINTER"
o INCREMENT "BPOINTER"
o ADD "DATA" TO "SUMCHECK"
STORE NEW "SUMCHECK"
(GETCYC)
(PROCESS)
TEST "BPOINTER">0
NO
(NOTX)
YES
TEST "SUMCHECK"=0
NO
(NOTX)
YES
VALID TRANSMISSION
o USE FIRST BITS OF BUFFER AS "PLAYER" AND ACCESS DATABASE FOR ERROR FLAG

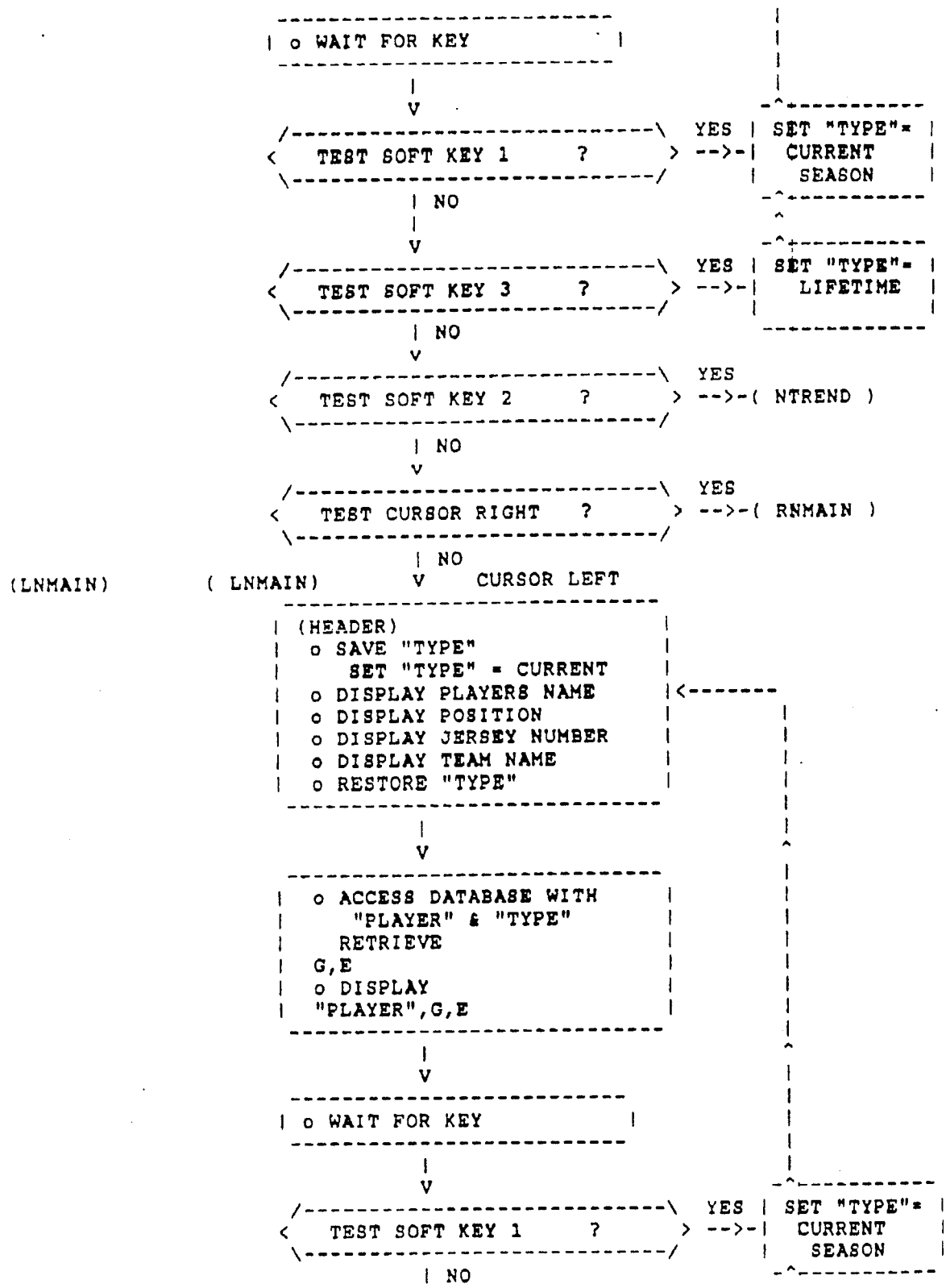

TEST ERROR FLAG SET ?
YES
TRANSMISSION (POWER UP) COMPLETE
NO
o COPY NEW DATA FROM BUFFER TO "PLAYER" DATABASE
(NOTX)
(POWER UP)
o INITIALIZE HARDWARE I/O
o CLEAR SCRATCH PAD MEMORY
o CLEAR DISPLAY MEMORY
TEST FOR PATTERN IN RAM
YES
NO (FIRST TIME THROUGH)
NO DATABASE PRESENT IN RAM
SET FLAG FOR ONLY LIFETIME DOWNLOAD
(MAIN)
TEST FOR DOWNLOAD FLAG
NO
(MAIN)
YES
o SORT TEAM STANDING BY WIN/LOSE RECORDS
o SORT PLAYERS INTO TEAMS "ROSTER" AND RECORD NUMBER OF PLAYERS ON TEAM
(MAIN)
(MAIN)
o DISPLAY TITLE SCREEN

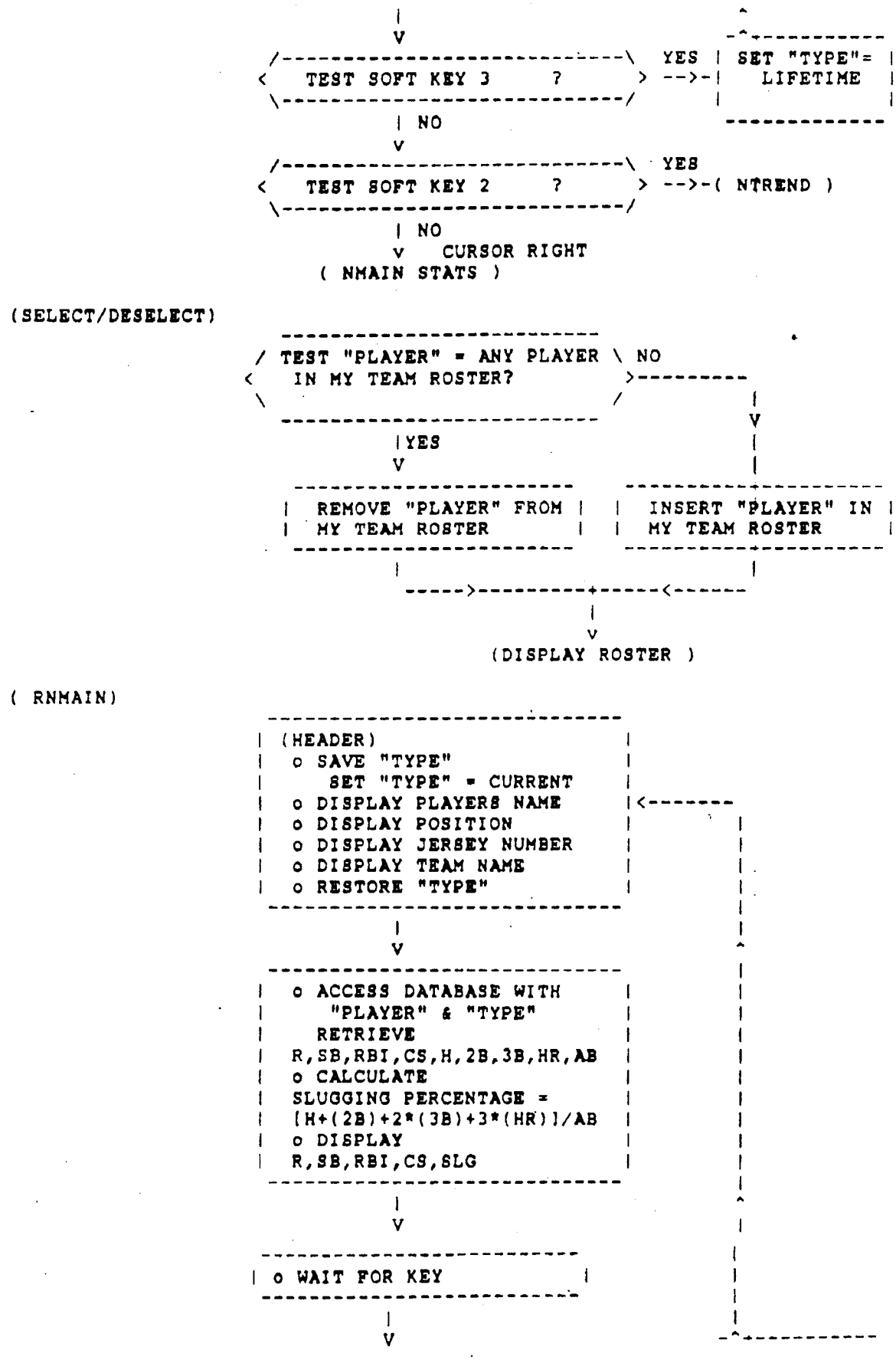

o WAIT SOME TIME
o DISPLAY SPONSORS SCREEN
o WAIT SOME TIME
(LEAGUE SELECT)
o DISPLAY
LEAGUE SELECTION SCREEN
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
NO
SET "LEAGUE" = AMERICAN
TEST SOFT KEY 2 ?
YES
NO
(MY TEAM) SOFT KEY 3
SET "LEAGUE" = NATIONAL
(MAIN OPTION #1)
o DISPLAY
MAIN OPTION MENU #1
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
(STATS)
NO
TEST SOFT KEY 2 ?
YES
(INFO)
NO
TEST SOFT KEY 3 ?
YES
(TEAM STATS)
NO
MUST BE CURSOR DOWN

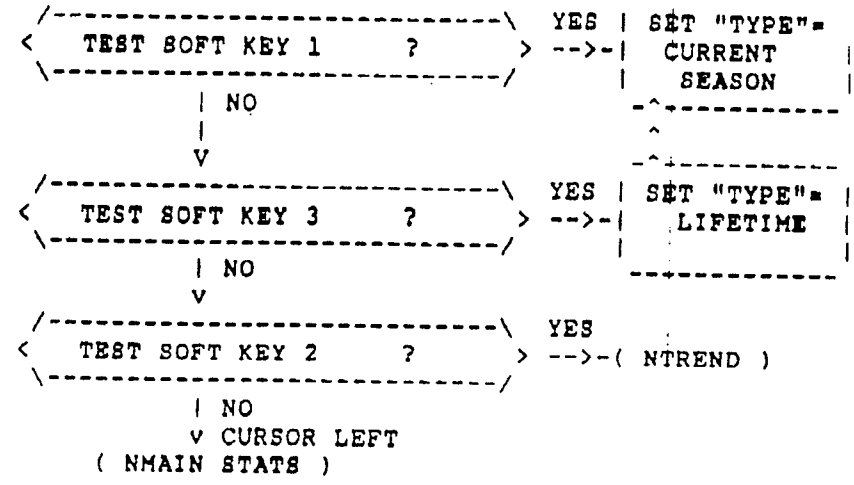

(MAIN OPTION #2)
o DISPLAY MAIN OPTION MENU #2
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
(CATEGORY)
NO
TEST SOFT KEY 2 OR 3 ?
YES
(UPDATE)
NO
MUST BE CURSOR UP
MAIN OPTION MENU #1
(STATS)
STATS
o DISPLAY SELECT EAST/WEST
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "LEAGUE" = EAST
NO
TEST SOFT KEY 3 ?
YES
NO
PREVIOUS KEY
YES
(MY TEAM)
TEST FLAG SHOW TEAM?
NO
MAIN OPTION MENU #1
SET "LEAGUE" = WEST


(LIST TEAMS)
o DISPLAY LIST TEAMS
LIST 3 TEAMS FROM LIST
o WAIT FOR KEY
TEST CURSOR KEY DOWN?
YES
ADD 3 TO LIST OF TEAM POINTER
NO
TEST CURSOR KEY UP ?
YES
SUB 3 TO LIST OF TEAM POINTER
NO
SOFT KEY 1 = 0 =>KEY
SOFT KEY 2 = 1 =>KEY
SOFT KEY 3 = 2 =>KEY
REGISTER "WTEAM"= TEAM POINTER + KEY
(ROSTER OF "WTEAM")
ROSTER OF "WTEAM"
o CLEAR ROSTER OFFSET = 0 "ROSTOFF"
(DISPLAY ROSTER)
DISPLAY ROSTER OF "WTEAM" THREE ENTRIES STARTING ROSTER(WTEAM+ROSTOFF)
o WAIT FOR KEY
TEST CURSOR KEY DOWN?
YES
ADD 3 TO "ROSTOFF" POINTER
NO

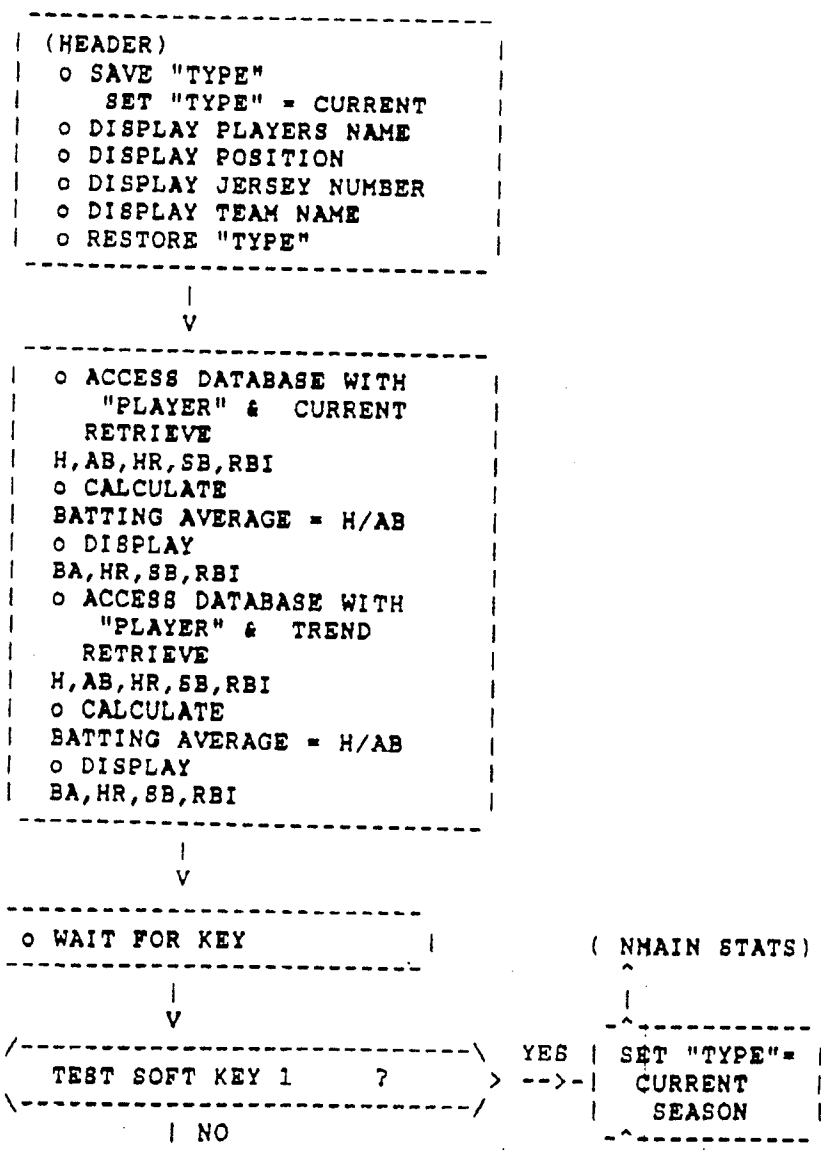

(LIST TEAMS)
NO
TEST CREATE FLAG
YES
(MYTEAM)
TEST CURSOR KEY UP ?
YES
SUB 3 TO "ROSTOFF" POINTER
NO
TEST PREVIOUS KEY
NO
SOFT KEY 1 = 0 =>KEY
SOFT KEY 2 = 1 =>KEY
SOFT KEY 3 = 2 =>KEY
REGISTER "PLAYER"= ROSTER(WTEAM+ROSTOFF+KEY)
TEST CREATE FLAG
YES
(SELECT/DESELE
SET "TYPE" = CURRENT SEASON
TEST "PLAYER" PITCHER?
YES
(PMAIN STAT)
NO
(NMAIN)
(NMAIN STATS)
NONPITCHERS
(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & "TYPE"
RETRIEVE
AB,H,BB,SO,2B,3B,HR
o CALCULATE
BATTING AVERAGE = H/AB
o DISPLAY
AB,BA,BB,SO,H,2B,3B,HR

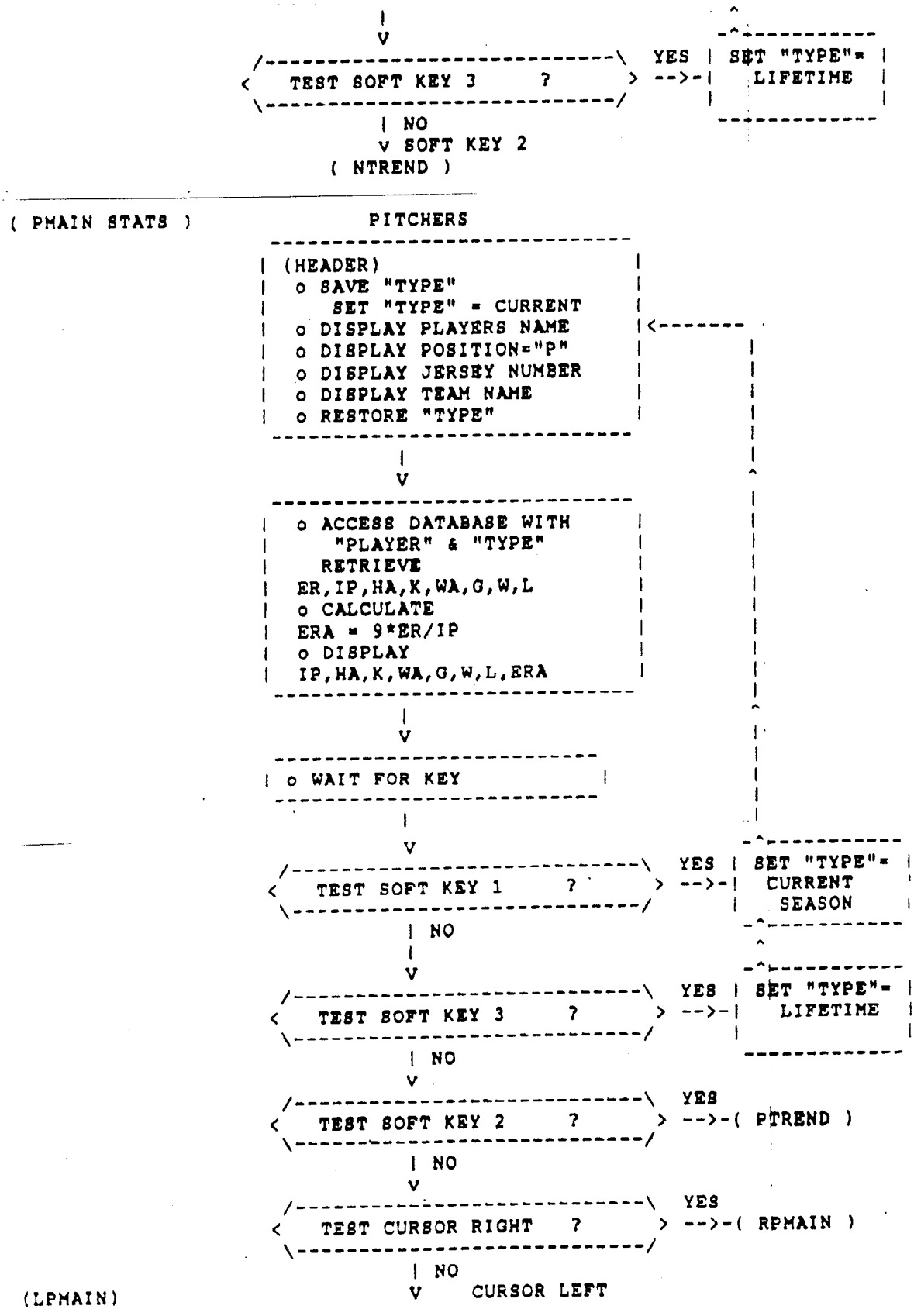

o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
TEST SOFT KEY 2 ?
YES
(NTREND)
NO
TEST CURSOR RIGHT ?
YES
(RNMAIN)
NO
(LNMAIN)
(LNMAIN)
CURSOR LEFT
(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & "TYPE"
RETRIEVE G,E
o DISPLAY "PLAYER",G,E
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO

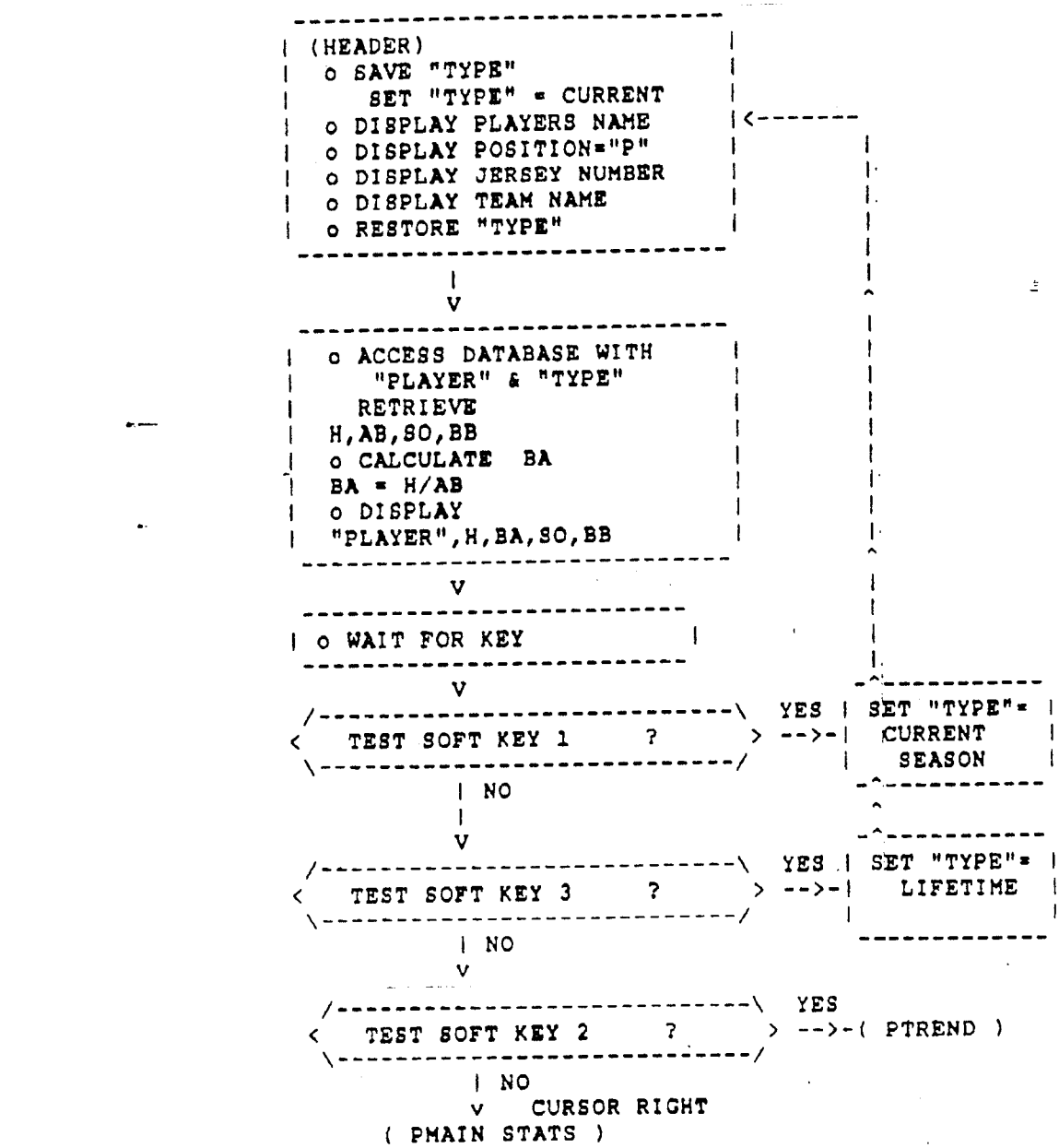

TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
TEST SOFT KEY 2 ?
YES
(NTREND)
NO
CURSOR RIGHT
(NMAIN STATS)
(SELECT/DESELECT)
TEST "PLAYER" = ANY PLAYER IN MY TEAM ROSTER?
NO
YES
REMOVE "PLAYER" FROM MY TEAM ROSTER
INSERT "PLAYER" IN MY TEAM ROSTER
(DISPLAY ROSTER)
(RNMAIN)
(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & "TYPE"
RETRIEVE R,SB,RBI,CS,H,2B,3B,HR,AB
o CALCULATE SLUGGING PERCENTAGE = [H+(2B)+2*(3B)+3*(HR)]/AB
o DISPLAY R,SB,RBI,CS,SLG
o WAIT FOR KEY


TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
TEST SOFT KEY 2 ?
YES
(NTREND)
NO
CURSOR LEFT
(NMAIN STATS)

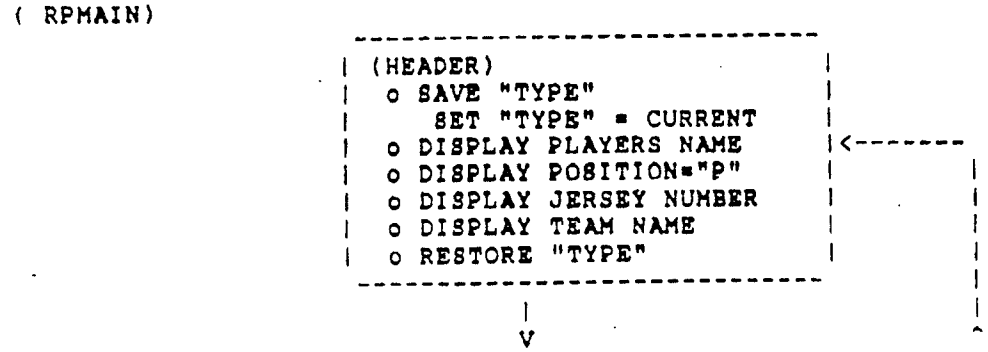
(NTREND)

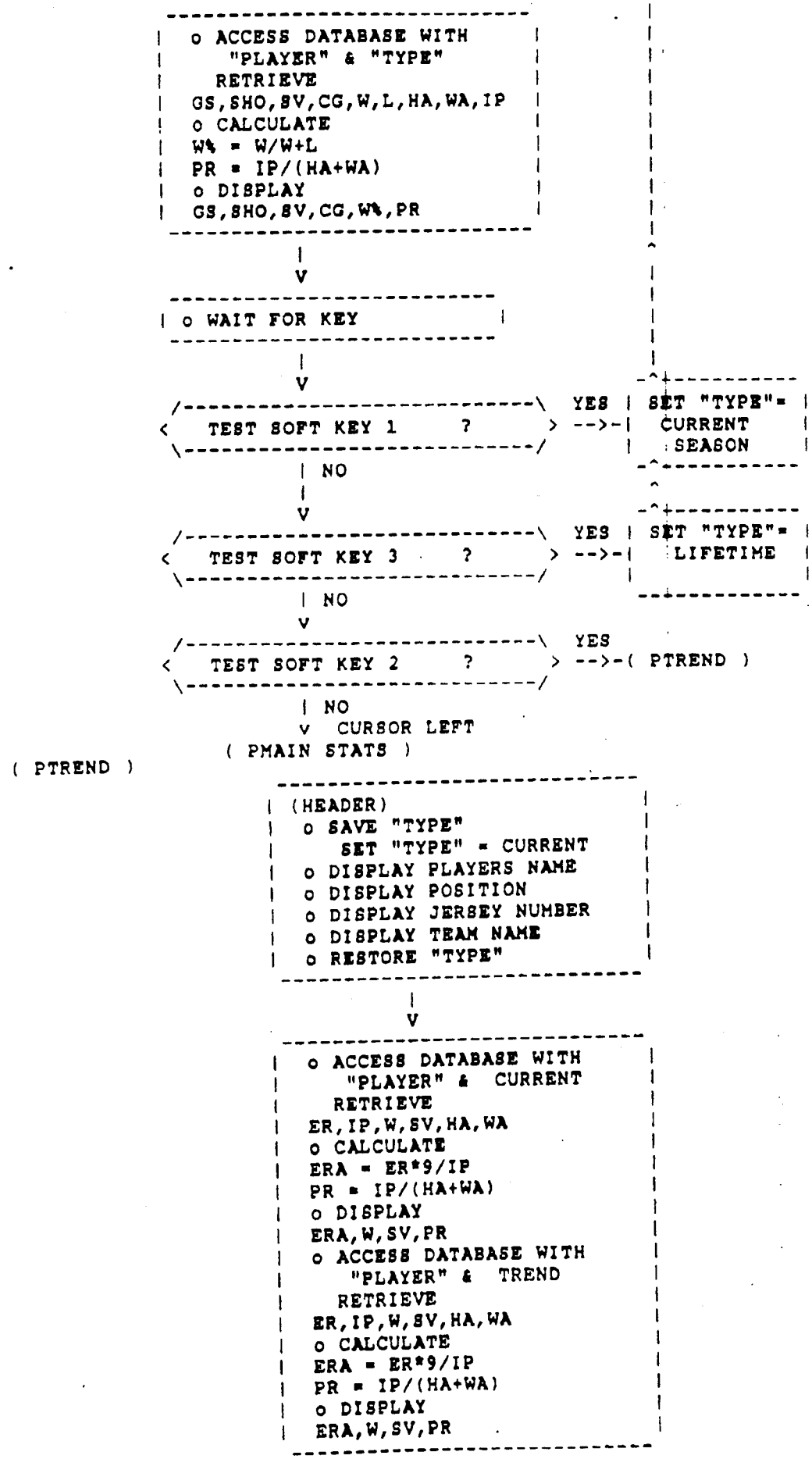

(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & CURRENT RETRIEVE H,AB,HR,SB,RBI
o CALCULATE BATTING AVERAGE = H/AB
o DISPLAY BA,HR,SB,RBI
o ACCESS DATABASE WITH "PLAYER" & TREND RETRIEVE H,AB,HR,SB,RBI
o CALCULATE BATTING AVERAGE = H/AB
o DISPLAY BA,HR,SB,RBI
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
(NMAIN STATS)

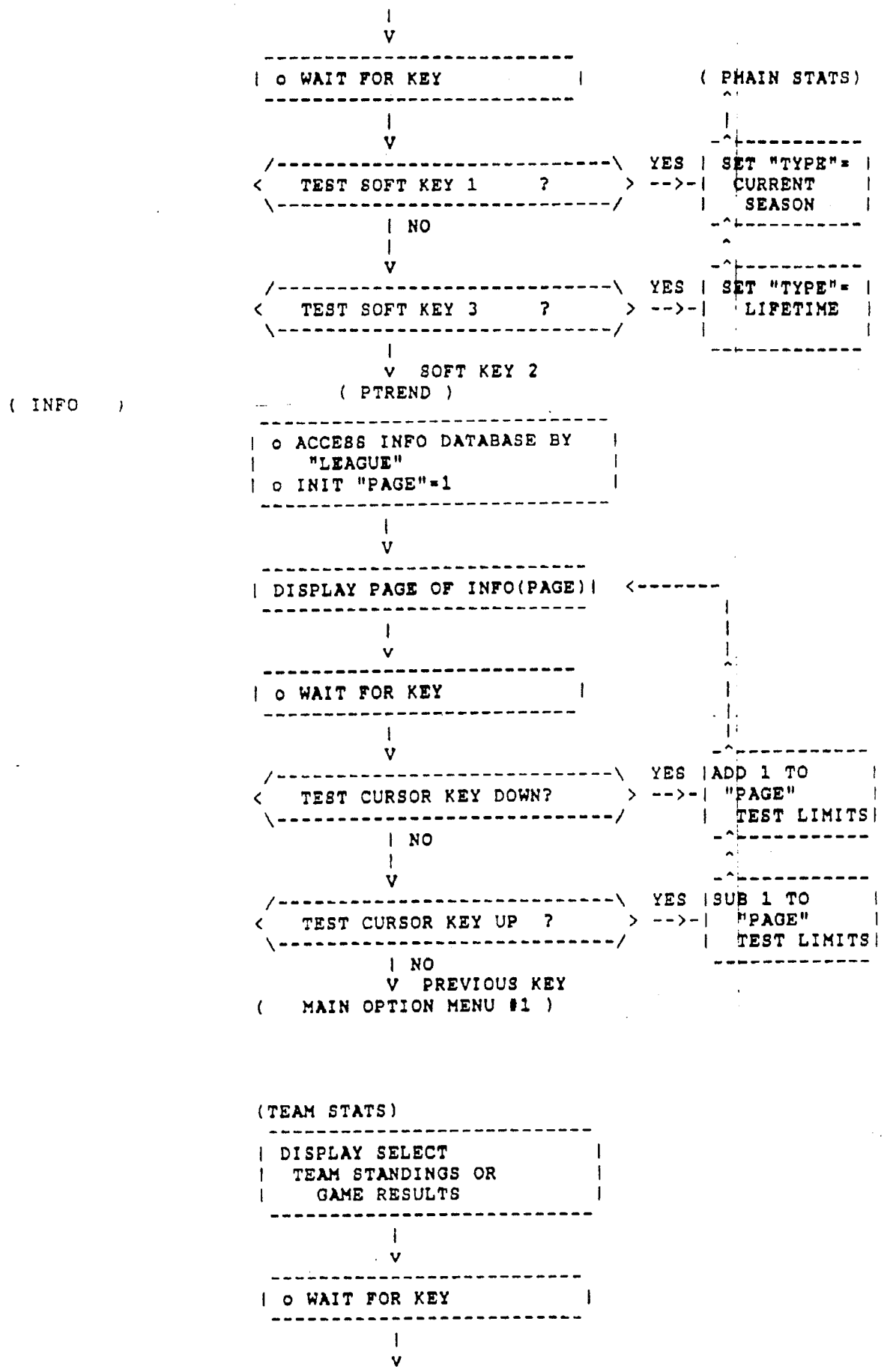

TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
SOFT KEY 2
(NTREND)
(PMAIN STATS)
PITCHERS
(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION="P"
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & "TYPE"
RETRIEVE ER,IP,HA,K,WA,G,W,L
o CALCULATE ERA = 9*ER/IP
o DISPLAY IP,HA,K,WA,G,W,L,ERA
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
TEST SOFT KEY 2 ?
YES
(PTREND)
NO
TEST CURSOR RIGHT ?
YES
(RPMAIN)
NO
CURSOR LEFT
(LPMAIN)

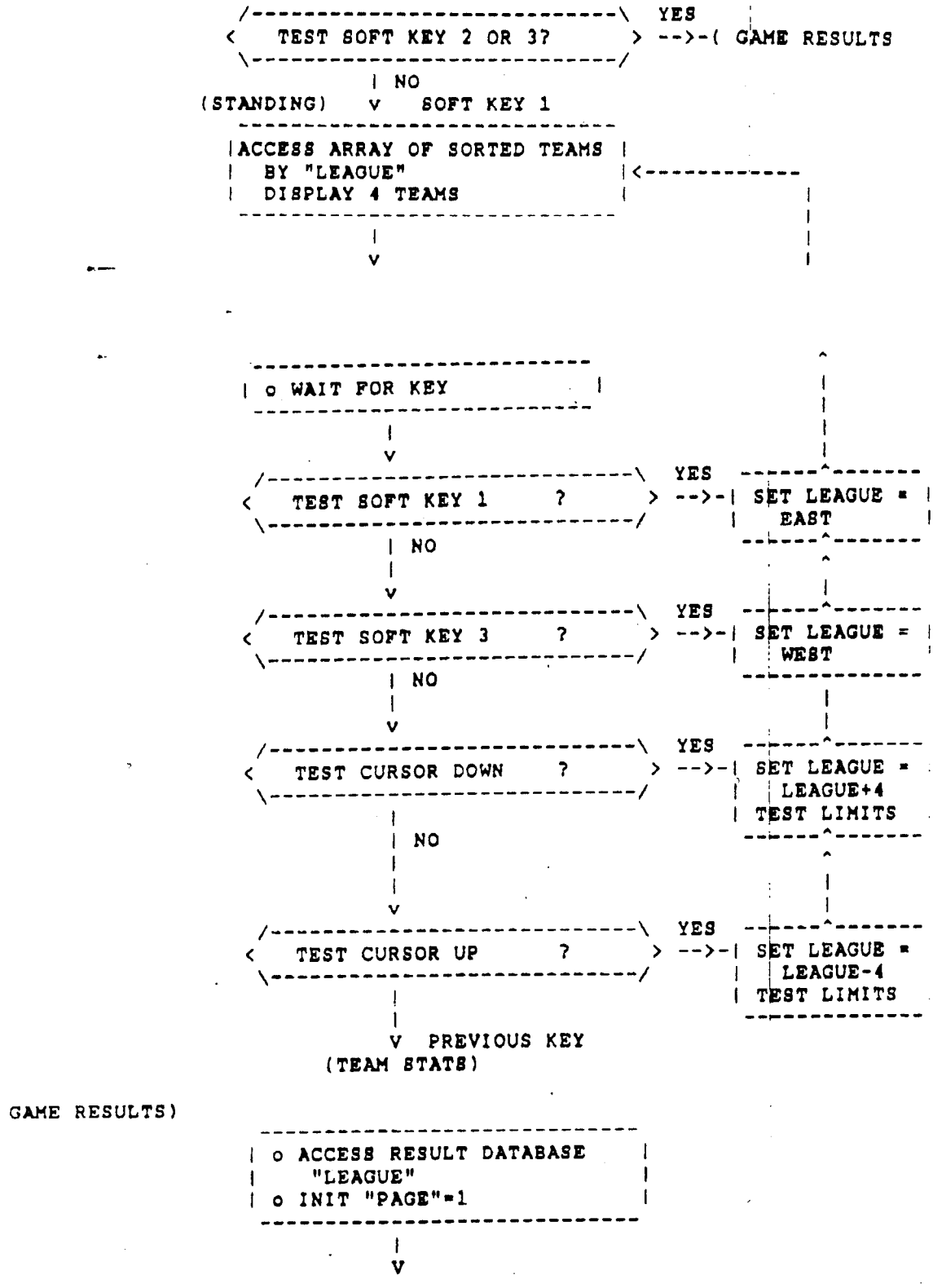

(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION="P"
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & "TYPE"
RETRIEVE H,AB,SO,BB
o CALCULATE BA
BA = H/AB
o DISPLAY "PLAYER",H,BA,SO,BB
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
TEST SOFT KEY 2 ?
YES
(PTREND)
NO
CURSOR RIGHT
(PMAIN STATS)

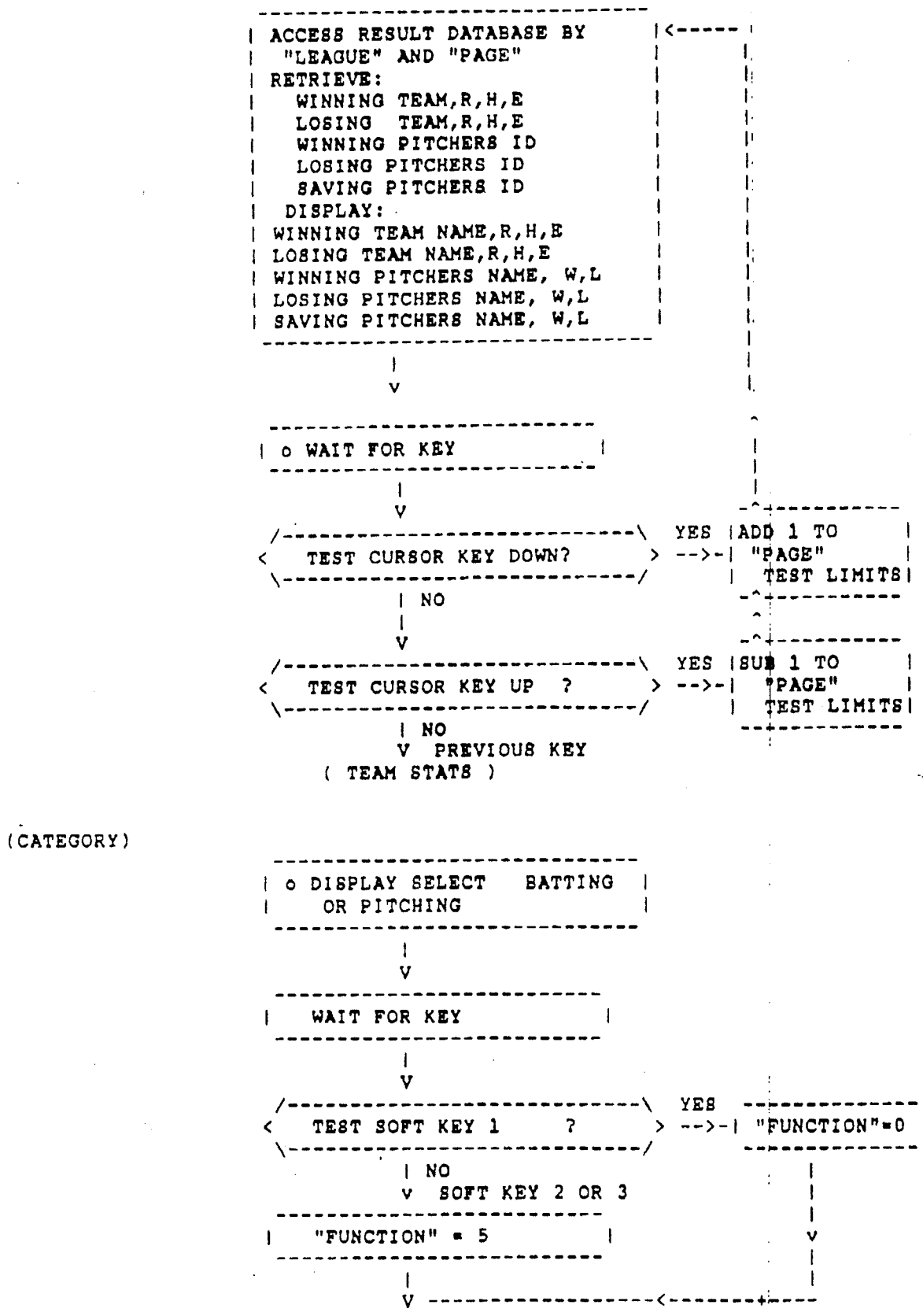
(RPMAIN)

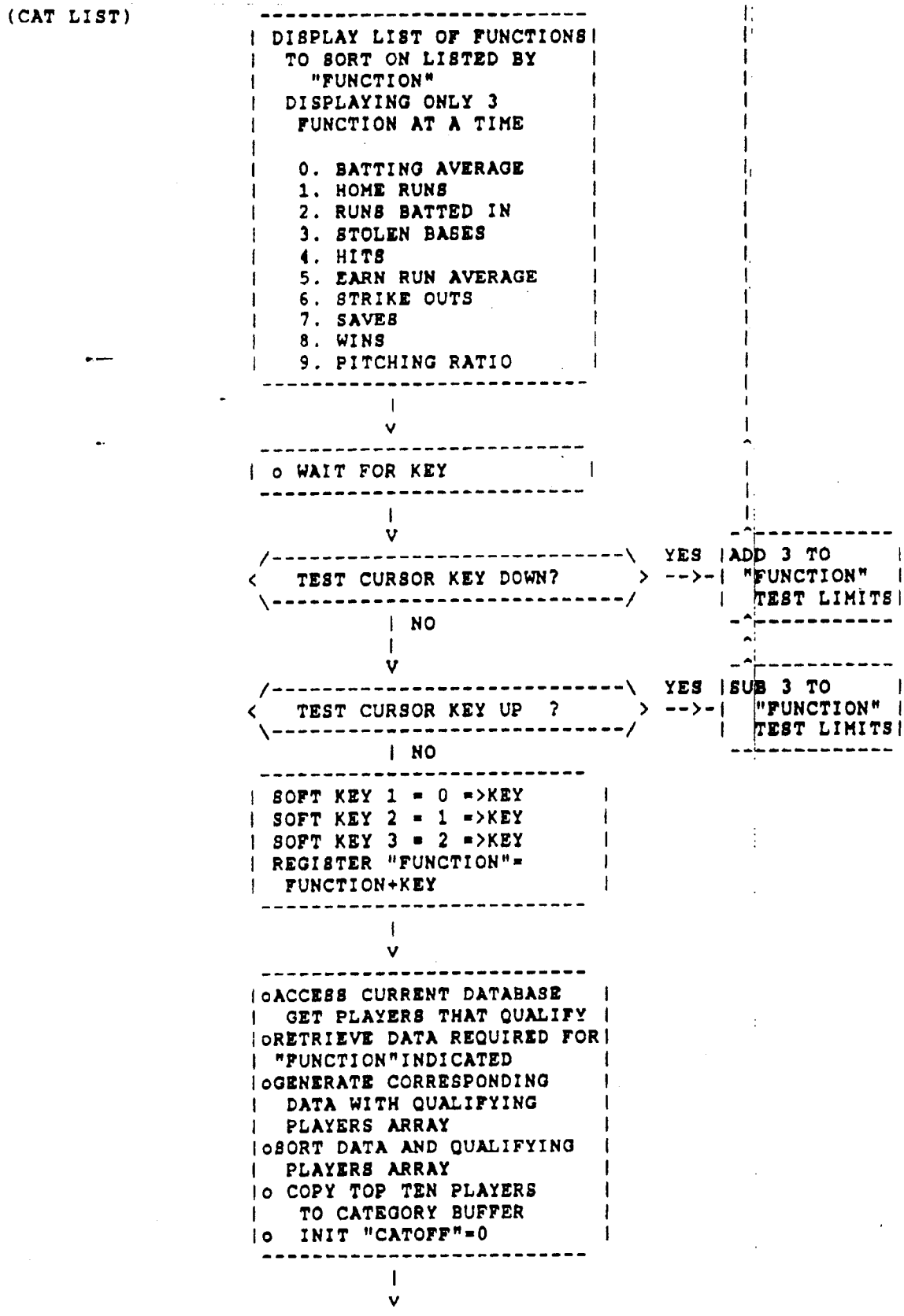

(HEADER)
o SAVE "TYPE"
SET "TYPE" = CURRENT
o DISPLAY PLAYERS NAME
o DISPLAY POSITION="P"
o DISPLAY JERSEY NUMBER
o DISPLAY TEAM NAME
o RESTORE "TYPE"

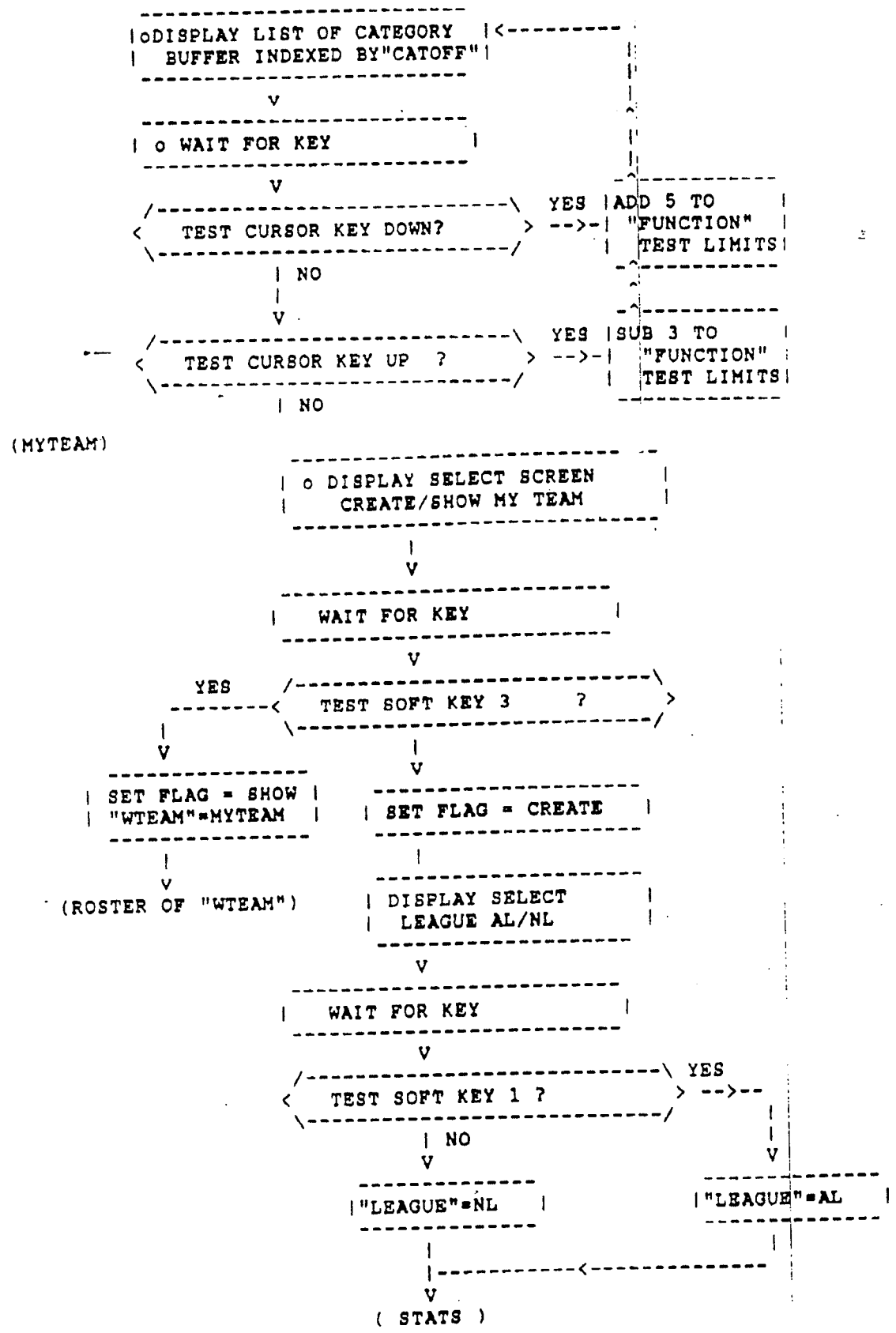

o ACCESS DATABASE WITH "PLAYER" & "TYPE" RETRIEVE GS,SHO,SV,CG,W,L,HA,WA,IP o CALCULATE W% = W/W+L PR = IP/(HA+WA) o DISPLAY GS,SHO,SV,CG,W%,PR
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
NO
TEST SOFT KEY 2 ?
YES
(PTREND)
NO
CURSOR LEFT
(PMAIN STATS)
(PTREND)
(HEADER) o SAVE "TYPE" SET "TYPE" = CURRENT o DISPLAY PLAYERS NAME o DISPLAY POSITION o DISPLAY JERSEY NUMBER o DISPLAY TEAM NAME o RESTORE "TYPE"
o ACCESS DATABASE WITH "PLAYER" & CURRENT RETRIEVE ER,IP,W,SV,HA,WA o CALCULATE ERA = ER*9/IP PR = IP/(HA+WA) o DISPLAY ERA,W,SV,PR o ACCESS DATABASE WITH "PLAYER" & TREND RETRIEVE ER,IP,W,SV,HA,WA o CALCULATE ERA = ER*9/IP PR = IP/(HA+WA) o DISPLAY ERA,W,SV,PR


(PMAIN STATS)
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET "TYPE"= CURRENT SEASON
NO
TEST SOFT KEY 3 ?
YES
SET "TYPE"= LIFETIME
SOFT KEY 2
(PTREND)
(INFO)
o ACCESS INFO DATABASE BY "LEAGUE"
o INIT "PAGE"=1
DISPLAY PAGE OF INFO(PAGE)
o WAIT FOR KEY
TEST CURSOR KEY DOWN?
YES
ADD 1 TO "PAGE" TEST LIMITS
NO
TEST CURSOR KEY UP ?
YES
SUB 1 TO "PAGE" TEST LIMITS
NO
PREVIOUS KEY
(MAIN OPTION MENU #1)
(TEAM STATS)
DISPLAY SELECT TEAM STANDINGS OR GAME RESULTS
o WAIT FOR KEY


TEST SOFT KEY 2 OR 3?
YES
GAME RESULTS
NO
(STANDING)
SOFT KEY 1
ACCESS ARRAY OF SORTED TEAMS BY "LEAGUE" DISPLAY 4 TEAMS
o WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
SET LEAGUE = EAST
NO
TEST SOFT KEY 3 ?
YES
SET LEAGUE = WEST
NO
TEST CURSOR DOWN ?
YES
SET LEAGUE = LEAGUE+4 TEST LIMITS
NO
TEST CURSOR UP ?
YES
SET LEAGUE = LEAGUE-4 TEST LIMITS
PREVIOUS KEY
(TEAM STATS)
GAME RESULTS)
o ACCESS RESULT DATABASE "LEAGUE"
o INIT "PAGE"=1


ACCESS RESULT DATABASE BY "LEAGUE" AND "PAGE"
RETRIEVE:
WINNING TEAM,R,H,E
LOSING TEAM,R,H,E
WINNING PITCHERS ID
LOSING PITCHERS ID
SAVING PITCHERS ID
DISPLAY:
WINNING TEAM NAME,R,H,E
LOSING TEAM NAME,R,H,E
WINNING PITCHERS NAME, W,L
LOSING PITCHERS NAME, W,L
SAVING PITCHERS NAME, W,L
o WAIT FOR KEY
TEST CURSOR KEY DOWN?
YES
ADD 1 TO "PAGE"
TEST LIMITS
NO
TEST CURSOR KEY UP ?
YES
SUB 1 TO "PAGE"
TEST LIMITS
NO
PREVIOUS KEY
(TEAM STATS)
(CATEGORY)
o DISPLAY SELECT BATTING OR PITCHING
WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
"FUNCTION"=0
NO
SOFT KEY 2 OR 3
"FUNCTION" = 5


(CAT LIST)
DISPLAY LIST OF FUNCTIONS TO SORT ON LISTED BY "FUNCTION" DISPLAYING ONLY 3 FUNCTION AT A TIME
0. BATTING AVERAGE
1. HOME RUNS
2. RUNS BATTED IN
3. STOLEN BASES
4. HITS
5. EARN RUN AVERAGE
6. STRIKE OUTS
7. SAVES
8. WINS
9. PITCHING RATIO
o WAIT FOR KEY
TEST CURSOR KEY DOWN?
YES
ADD 3 TO "FUNCTION" TEST LIMITS
NO
TEST CURSOR KEY UP ?
YES
SUB 3 TO "FUNCTION" TEST LIMITS
NO
SOFT KEY 1 = 0 =>KEY
SOFT KEY 2 = 1 =>KEY
SOFT KEY 3 = 2 =>KEY
REGISTER "FUNCTION"= FUNCTION+KEY
oACCESS CURRENT DATABASE GET PLAYERS THAT QUALIFY
oRETRIEVE DATA REQUIRED FOR "FUNCTION"INDICATED
oGENERATE CORRESPONDING DATA WITH QUALIFYING PLAYERS ARRAY
oSORT DATA AND QUALIFYING PLAYERS ARRAY
o COPY TOP TEN PLAYERS TO CATEGORY BUFFER
o INIT "CATOFF"=0


o DISPLAY LIST OF CATEGORY BUFFER INDEXED BY "CATOFF"
o WAIT FOR KEY
TEST CURSOR KEY DOWN?
YES
ADD 5 TO "FUNCTION" TEST LIMITS
NO
TEST CURSOR KEY UP ?
YES
SUB 3 TO "FUNCTION" TEST LIMITS
NO
(MYTEAM)
o DISPLAY SELECT SCREEN CREATE/SHOW MY TEAM
WAIT FOR KEY
TEST SOFT KEY 3 ?
YES
SET FLAG = SHOW "WTEAM"=MYTEAM
(ROSTER OF "WTEAM")
SET FLAG = CREATE
DISPLAY SELECT LEAGUE AL/NL
WAIT FOR KEY
TEST SOFT KEY 1 ?
YES
NO
"LEAGUE"=NL
"LEAGUE"=AL
(STATS)

What is claimed is:

1. A method for accessing data comprising the steps of:

storing a data base in binary form at a central location, the data base being arranged in data groups having addresses;

connecting one or more telephone lines to the central location;

modulating and coupling the data base in a prescribed sequence of data groups to one of the telephone lines responsive to a call-up signal;

sending a call-up signal to one of the telephone lines from a telephone terminal at a remote location, there being resident at the remote location a computer having a memory for storing a data base in data groups at the addresses specified at the central location, each data group of the memory having a flag bit that is alternately in a set or reset state, a screen for selectively displaying the stored data base, a plurality of input controls, and a microprocessor coupled to the telephone terminal and programmed to retrieve from the memory and display on the screen data selected by operation of the input controls;

setting the flag bit of all the data groups when the call-up signal is sent to the central location by the telephone terminal;

receiving the data base transmitted from the central location at the telephone terminal when the telephone line is called up;

demodulating the received data base;

coupling the demodulated data base from the telephone terminal to the memory of the computer to update the data base stored in the memory one data group at a time by storing such data group at the specified address and resetting the flag bit at such address;

signaling the end of transmission after all the flag bits have been reset; and

operating the input controls to access the data stored in the memory of the computer.

2. The method of claim 1 in which the step of coupling the data base to the memory of the computer comprises checking the flag bit at the specified address of each data group and overwriting the data stored at said specified address with the demodulated data group only if the flag bit is set at the time of checking.

3. The method of claim 2 in which the step of coupling the data base to the memory of the computer additionally comprises initiating the signaling step if the flag bit is reset at the time of checking.

4. The method of claim 3 in which the signaling step comprises displaying a visual indication on the screen.

5. The method of claim 3 in which the data groups stored at the central location also have error checks, the method additionally comprising the steps of inspecting the error checks in the microprocessor prior to the coupling step; checking the flag bits of the displayed data groups, and indicating on the screen that a displayed data group is not updated when the flag bit of said displayed data group is set, the coupling step comprising overwriting the data group stored at said specified address with the demodulated data group and resetting the flag bit only when the error checks are verified by the inspection.

6. The method of claim 3 in which the signaling step comprises disconnecting the telephone line from the telephone terminal at the remove location.

7. The method of claim 1 in which the step of coupling the data base to the memory of the computer additionally comprises initiating the signaling step if the flag bit is reset at the time of checking.

8. The method of claim 1 in which the data groups stored at the central location also have error checks, the method additionally comprising the steps of inspecting the error checks in the microprocessor prior to the coupling step; checking the flag bits of the displayed data groups, and indicating on the screen that a displayed data group is not updated when the flat bit of said displayed data group is set, the coupling step comprising overwriting the data group stored at said specified address with the demodulated data group and resetting the flag bit only when the error checks are verified by the inspection.

9. The method of claim 1 in which the setting and resetting steps are software controlled.

10. A method for accessing data comprising the steps of:

storing a data base in binary form at a central location;

connecting one or more telephone lines to the central location;

modulating and coupling the data base in an encoded form to one of the telephone lines responsive to a call-up signal;

sending a call-up signal to one of the telephone lines from a telephone terminal at a remote location, there being resident at the remote location a computer having a memory for storing a data base, a screen for selectively displaying the stored data base, a plurality of input controls, and a microprocessor with a data input port and an internal clock, the microprocessor being programmed to retrieve from the memory and display on the screen data selected by operation of the input controls;

receiving the data base transmitted from the central location at the telephone terminal when the telephone line is called up;

shaping the received data base to be compatible with the data input port of the microprocessor;

coupling the shaped received data base from the telephone terminal to the microprocessor, the microprocessor being programmed to demodulate and store in the memory the received data base; and

operating the input controls to access the data stored in the memory of the computer.

11. A method for accessing data comprising the steps of:

storing a data base in binary form at a central location;

connecting one or more telephone lines to the central location;

modulating and coupling the data base to one of the telephone lines responsive to a call-up signal;

sending a call-up signal to one of the telephone lines from a telephone terminal having a handset with speaker at a remote location, there being also resident at the remote location a computer having a memory for storing a data base, a screen for selectively displaying the stored data base, a plurality of input controls, a microprocessor, the microprocessor being programmed to retrieve from the memory and display on the screen data selected by operation of the input controls, and an acoustic coupler;

placing the acoustic coupler close to the speaker of the handset to receive the data base transmitted from the central location when the telephone line is called up;

connecting the acoustic coupler to the microprocessor, the microprocessor being programmed to store in the memory the received data base; and

operating the input controls to access the data stored in the memory of the computer.

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